

# **INDIAN BEND WASH**

A Scottsdale, Arizona success story  
of one of the nation's most outstanding  
flood-control projects. Acclaimed as an  
engineering wonder of the world.

*Published by*  
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## *Dedication*

This book is dedicated to those Scottsdale citizens, city officials, the business community and representatives of the federal, state and county governments who have worked together for many years to come out victorious over one of the most destructive forces of nature.

With the cooperation and expertise of the Maricopa County Flood Control District and the U.S. Army Corps of Engineers in particular, the Indian Bend Wash Greenbelt has come into being with its parks, playgrounds, ballfields, lakes, picnic areas and other recreational amenities. These professionals are to be commended for their foresight, integrity and innovative spirit. Their achievement and commitment are the foundation for the success of this outstanding flood-control innovation.

This history is published by the City of Scottsdale, Arizona with special thanks to Debbi Dollar, Barbara S. Foster, Margaret Gartner, and Marjorie MacLean for their valuable assistance in the preparation of the manuscript.

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## FOREWORD

Scottsdale is a very special community. In my mind, it's the best community there is and I wouldn't want to live anywhere else. One of the reasons that Scottsdale is such a special place is our citizens — caring, involved people who take an active part in the development of our city.

The Indian Bend Wash was not always as beautiful and inviting as we know it today. When the forces of nature threatened to rip our community in two, and destroyed property time and again, the people of Scottsdale banded together. The Indian Bend Wash greenbelt flood-control project is a shining example of a solution that was born out of citizen concern and involvement.

We in Scottsdale are extremely proud of the Indian Bend Wash success story. The project has received worldwide recognition and now serves as a model for developing solutions to flood-control problems worldwide. As a community we are now rewarded by the many parks, golf courses and other recreation facilities available to us. As people, we learned a most valuable lesson: by working together, seemingly insurmountable problems can be turned into opportunities.

On behalf of the Scottsdale City Council, it is an honor to present this recorded history in recognition of the completion of such an outstanding project. We applaud the U.S. Army Corps of Engineers for its achievement, and the many citizens who gave their time and energy so that we might all be safe and enjoy our community to the fullest.

A handwritten signature in black ink, reading "Herbert R. Drinkwater". The signature is written in a cursive, flowing style.

Herbert R. Drinkwater  
Mayor

## PREFACE

What do you do when suddenly, sometimes with little or no warning, raging flood waters rip your city in half? Not so long ago that was the question faced by the City of Scottsdale, located in the heart of the Arizona desert.

Since its founding at the turn of the century by Army Chaplain Winfield Scott, the area had suffered periods of drought as well as devastating flash floods. These threatening waters followed the path of a normally dry wash (referred to locally as the Slough), through a budding community of agricultural settlers who were at the mercy of the elements.

In 1950, Scottsdale was still a small, sleepy town of some 2,000, but over the next 30 years it changed dramatically. Lured by the warm weather and free, open lifestyle of the Southwest, newcomers poured into Scottsdale by the thousands. Today, the sleepy little town of the early fifties has grown into a vital, booming city of more than 100,000. A friendly, western lifestyle remains, but urbanization has pushed back the desert. Beautiful homes, lush parklands and thriving garden industries stand where formerly all was desert.

Unfortunately, the desert doesn't always forgive encroachment by civilization. Soon after the population boom began, problems with nature became more and more serious. Deserts are notorious for flash floods from intense, summer rainstorms, and waters sometimes came raging down from the mountain watersheds to the north—tearing through the very heart of Scottsdale. Homes were destroyed, lives lost and cars swept away, and emergency rescues became commonplace. Time after time, damage was measured in the millions of dollars.

The problem was centered in the Indian Bend Wash—an eroded, seven-mile-long area running north-south through the center of the community. When water rampaged through the wash, it spilled over into nearby residential areas, sending citizens fleeing to higher ground, separating families and barricading people from critical emergency services and places of employment. Even in dry times, the wash was an eyesore. Overgrown with weeds and mesquite, it contrasted sharply with the neatly groomed homes nearby.

In 1959, steps were finally taken to resolve the problem. The Arizona State Legislature formed the Maricopa County Flood Control District and this new agency, through the United States Congress, enlisted the aid of the U.S. Army Corps of Engineers in

seeking solutions to the flooding. In 1961, the Corps came up with a plan which was later congressionally approved. It suggested building a concrete channel on the site of Indian Bend Wash—seven miles long and emptying into the Salt River to the south. The channel would have been about 23 feet deep and 170 feet wide.

So what do you do when raging flood waters threaten to divide your city? Do you divide it further by building a concrete ditch? Scottsdale citizens didn't think so. There had to be another solution.

In 1964, a citizens' committee called the Scottsdale Town Enrichment Program, or STEP Committee, had evolved. It was authorized by the City Council to act in an advisory capacity, coordinating its efforts with public works and parks and recreation commissions. Responding to the STEP Committee's recommendations, the people of Scottsdale voiced strong opposition to the concept of the concrete channel, and defeated a county bond election in 1965.

Instead of building a concrete channel, a study verified the feasibility of the STEP Committee's recommendations—to turn the entire Indian Bend Wash into a greenbelt of recreation running through the heart of the city; a series of badly-needed recreational parks and lakes which could also serve as an effective way to control floods. Knowing it had the support of citizens, as early as 1966 the Scottsdale City Council began negotiating for what is now known as Eldorado Park—the first federally-funded, open-space project in Arizona.

“Turn the problem into an opportunity,” the people said. “Make our eyesore a beauty spot of open spaces that will at the same time alleviate our flood problem.” An interesting idea, but first the Corps of Engineers had to be convinced. Their approval and cooperation were necessary, not only to design and build such a project but to acquire the necessary funds. They had to turn away from the concrete channel concept, away from what they knew would work, away from the traditional method of flood control, and be convinced of the greenbelt concept—an unproven idea far different from anything the Corps had tried before. This was accomplished through the combined efforts of many people—through concerned, individual citizens, unceasing congressional support, an innovative and professional city staff, a dedicated City Council, and untiring members of the STEP Committee and city commissions. Finally, with the Corps in agreement, federal funds were committed to the project.



The greatest problem, however, was still ahead. Encroachment has created problems in many areas of the United States; however, in the case of Scottsdale, the establishment of a floodplain ordinance regulating encroachments was the key to successful implementation of the project. Scottsdale's model ordinance meets federal insurance requirements for floodplain regulation and is unique in that it makes no distinction between the floodway and the floodway fringe. The developer has the responsibility for providing proof that any encroachment in the floodplain will not raise the water surface in a one-hundred-year flood. In order to encroach, the developer must make improvements to the channel. These improvements have taken the form of excavation and planting grass, and developing urban lakes and golf courses as amenities—saving Scottsdale taxpayers millions of dollars. Because of this unique floodplain ordinance and use of a nonstructural, greenbelt concept, more than half the wash has been developed at no cost to the city, and much of the remaining land has been dedicated for development of publicly-owned recreation facilities.

In 1973, on the heels of the worst flood on record, the citizens of Scottsdale approved (by an astounding seven to one margin) a \$10 million bond issue for flood control—a strong mandate from the people. They had, indeed, supported the greenbelt concept! Private developers quickly became interested in the prospect of building apartments, condominiums and single homes with a view of the new greenbelt. And so it began.

By 1976, Scottsdale had entered into a contract with the Corps of Engineers whereby the Corps agreed to finance parks and recreation projects for a five-year period. The city agreed to repay (over a fifty-year period) about half the costs incurred.

Gradually, parks and lakes began to take shape along the seven-mile strip. Small hills and valleys were contoured to control and direct the flow of water. No longer would floodwaters run rampant down the wide, shallow floodplain. At the upstream end, small dikes and an interceptor channel were constructed to direct the water into the deepened contour of the wash. Debris and wild underbrush were removed, and in their place were planted special grasses with deep root systems. Trees were strategically placed so as not to dam the flow of water.

Tennis court fences were specially designed to break away and float in concert with the flood, then return to their normal positions with a minimum of damage as the waters subside. Golf courses were

also designed to endure floods. After the waters recede, the silt can simply be washed away and the courses readied for use in a few days. Small lakes were integrated into the Park Master Plan and, because of their carefully selected locations and special design, actually slow and dissipate the energy of the rushing water and reduce the potential for damage that might occur if the water sped downstream unimpeded. Bridges crossing the pedestrian and bicycle trail system within the wash were designed to withstand high water flows and built so that, even at the peak of a flood, traffic continues across the wash.

The project now provides a string of parks, golf courses, swimming pools (including the state's largest free-form public pool), and fishing and boating lakes within walking distance of more than 60,000 residents. Of the nearly 1,200 acres in the greenbelt, more than 300 are devoted to city parks. The remaining acreage is comprised of small lakes or recreation areas set aside for activities like golf and tennis.

What is there to do in Scottsdale's Indian Bend Wash greenbelt? Plenty! There are tennis, basketball and racquetball courts, major league baseball, lighted multi-purpose fields for football, baseball and soccer; there are shuffleboard, horseshoes, jogging, golfing, and fishing in well-stocked lakes. Indian Bend Wash boasts the nation's first urban campground, biking, hiking, picnic facilities, sandboxes and swing sets, paddleboats for kids of all ages and large, comfortable benches for just about everyone.

The greenbelt has provided the city of Scottsdale with a great opportunity for developing and promoting scores of special events and annual celebrations and festivals. Any weekend—and every holiday—will find thousands of people enjoying the wealth of family activities within the greenbelt. There are the Festival of Nations, Mighty Mud Mania, and Halloween activities complete with haunted house and community bonfires, and many, many other family activities that take advantage of both the Indian Bend Wash greenbelt and Scottsdale's beautiful climate. There are exhibit areas for art exhibits and festivals, and an amphitheater for outdoor concerts. Central to the greenbelt is the Indian Bend Wash Visitor Information Center, in Indian School Park. There is everything imaginable to draw Scottsdale families and visitors together in the great outdoors—all integrated within a flood control project.

Along the fringes of the wash today stand numerous apartment buildings and condominiums, each in great demand and considered premium properties because of their proximity to the greenbelt. And,

not incidentally, these developments have added considerably to the city's tax base. Today the wash is a family gathering spot, a prime example of how a serious community problem was turned into an asset.

There have been many awards. In 1974, along with NASA's Mariner 10 space probe to Mars, the Trans-Alaskan pipeline and Chicago's Sears tower, the Indian Bend Wash greenbelt was named one of the ten most outstanding engineering projects in the nation. It has served as a model for many other projects and as an example for the Army Corps of Engineers in showing its unique approach to traditional flood-control problems. The project has earned international recognition from the International Congress on Irrigation and Drainage by the publication of a professional paper and a multimedia exhibit at the 11th Congress in Grenoble, France.

But most importantly, the concept works. In the past several years, hit with two floods of a magnitude that should occur only *once* in a hundred years, and a third that should occur only once in *five* hundred years, Scottsdale survived without incident. The wash successfully channeled the water through the city and into the river to the south. A few days of cleanup and the greenbelt was as beautiful as ever. No homes were damaged; no cars swept away; no lives lost.

And the key to the entire project was teamwork. It took constant, united effort to bring the various groups and agencies together, to rally public, business and government support, and to raise the necessary funds. While the city of Scottsdale is proud of the greenbelt's appearance and its ability to prevent flooding, it is prouder of what the project says about people and governments working together.

What about other cities with flooding problems? Can the greenbelt concept work for them too? Can it be adapted to existing systems? Yes, it can! Although the idea of using a greenbelt channel is not new, the integration of recreation and compatible land uses into a federally-funded, urban, flood-control project is a first. It is a concept that has been enormously successful for Scottsdale; a concept which has had major significance in solving the nation's flood problems. The greenbelt can help other government agencies fulfill their responsibilities not only to protect residents against floods, but to provide them with abundant park and recreational facilities as well.

## CHAPTER 1

# The Need for Control

When it rains in the desert the storms are often dramatic. They may continue for days.

Because of the makeup of the desert soil, rainwater often has little choice about where it will go. A little will filter into the ground. But there is almost always too much water too fast for the hardpacked earth to handle. With little vegetation to hinder its flow, the remaining rainfall will froth its way through the paths of least resistance, gaining momentum as minor streams converge and shove everything out of the way.

The Indian Bend Wash has always flooded. Water from heavy storms pours off the Phoenix and McDowell Mountains seeking natural channels to the south and the Salt River. Oldtimers say the really big ones come only about once every fifty years. In the early 1970s, the oldtimers were proven very wrong. Two disastrous floods in two years. The second coupled with a tornado of explosive proportions took a life and caused damage in excess of \$5 million to property owned by the city of Scottsdale and its residents.

Though generally dry, the Indian Bend Wash is considered a major stream because of the extent of its drainage area. It rises on the southwest slope of the McDowell Mountains which make up its northeast edge. To the east and the southeast is the Salt River Indian Community. The western border stretches into the city of Phoenix. The Phoenix Mountains form the northwest corner. Rainfall over the Wash averages 7.8 inches a year for a low at the Salt River to a high of 14 inches annually in the higher mountains. Rainfall is divided about equally between winter and summer months.<sup>1</sup>

Whether the Wash flooded or blew dust wasn't a real problem until people began to build in its path. That began to occur towards the end of the 1800s.

## *The Need For Control*

Scottsdale was founded by Winfield Scott, a Baptist preacher and missionary. Scott served his country as well as his God; as a captain in the Grand Army of the Republic during the Civic War and later as chaplain in the United States Army.

Missionary work took Scott steadily westward, eventually to California. Over the years he became well known as an ardent recruiter for immigration to California's rich farm lands.

In 1888 he was invited to Phoenix to present his ideas on promoting the Salt River Valley. His enthusiasm for the area led him to make a downpayment of 50 cents an acre on a section of land 10 miles northeast of Phoenix. Under the Desert Land Act of 1877, this land was to be irrigated within three years. With access to the nearby Arizona Canal, Scott had no trouble tapping the productivity of his land.<sup>2</sup>

Unlike many who have bought land in the Salt River Valley, Winfield Scott was no speculator. He had a vision of a community thriving on an agriculturally rich economy, and a seasonal flow of winter visitors attracted by the warm climate. He promoted this vision on numerous trips throughout the country.

During February, 1891, his enthusiasm was dampened a bit by a massive and destructive flood that swept through the Salt River Valley. The Scott family's losses were minimal compared to others who, having built in the floodplain, lost everything. Turning "adversity into advantage" he wrote to the New York *Evangelist*, a leading Baptist newspaper. He pointed out that the rain had saved many crops threatened by a months-long drought. And he spoke to a key issue for future growth in the area when he said that the flood clearly defined where it was safe to build. The article resulted in numerous inquiries from prospective settlers encouraged about the availability of water in the area.<sup>3</sup>

In February, 1894, plans were announced to subdivide the northwest 40 acres of the section purchased by Scott and create a townsite. It was to be a residential community for workers commuting to Phoenix. A complex of small homes was planned for rental to winter visitors.<sup>4</sup>

Lots went on sale in 1895. The first school was built in 1896. When the first post office opened in 1897, Scottsdale was officially on the map.

Population grew slowly. In 1901 it numbered about 200. By 1940 the population was estimated to be 743. But this trickle of humanity turned into a flood of settlers after World War II. They came seeking

a new start, a different lifestyle, a new frontier, and the freedom of open spaces and a warm climate.

In 1951 Scottsdale was incorporated with a bucking bronco on its city seal and a population of about 2,000 living in a one-square-mile area. The expanding Phoenix area added to the town's growth when its residents began spilling into neighboring communities. But as the "West's Most Western Town," Scottsdale offered its own attractions.

Today, the Winfield Scott claim lies in the heart of Scottsdale. It is bounded by Scottsdale Road on the west, Indian School Road on the south, Hayden Road on the east and Chaparral Road on the north.

As the population increased, the original town site could not accommodate the numbers of new people and housing developments that heralded the city's growth. The pressure of this growth pushed eastward towards the Indian Bend Wash.

Traditionally floodplains have been enticing places to develop. The land is generally flat, easy to build on and inexpensive to buy. People who can afford to build elsewhere will because of the threat of natural disaster. In the desert, a natural wash area is a particularly appealing floodplain for development. There is so rarely water in the wash, that the danger is often overlooked.

As the pressure of the expanding Scottsdale population pushed development towards the Wash, the Wash became an increasingly dangerous place in which to build. Miles of new streets, thousands of waterproofed roofs, and acres of parking lots reduced the land area into which rainwater could filter and increased the speed of rain runoff into the Wash.

Because of its location and north-south direction, the Indian Bend Wash now splits the city of Scottsdale in two. In the past when the big storms hit, half the city's population would be cut off from most emergency services.

The natural channel of the Indian Bend Wash is shallow. During the past 50 years, 15 floods, each more damaging than the last, have swept beyond its banks.

Flash floods have been a concern in much of Arizona. As the population grew throughout the state, clashes between necessary community expansion and the forces of nature increased.

## CHAPTER 2

# First Steps

In 1959, the first steps were taken to deal with the state's growing flood control problem. The Arizona State Legislature authorized county boards of supervisors to establish Special Flood Control Districts.<sup>5</sup> This act, approved by the governor on March 23, became effective immediately. For the first time, county supervisors could define flood-prone areas and levy taxes for the resolution of flooding problems.

On August 3, the Flood Control District of Maricopa County (FCDMC or MCFCD) was created.<sup>6</sup> The MCFCD became responsible for developing a comprehensive program for flood control on a county-wide basis and serving as the local sponsor of any federal flood control projects.

During 1959, the United States Army Corps of Engineers (the Corps) also became involved with Maricopa County's flooding problems. The Corps' District Engineer held a public hearing on December 9. A crowd of 178 people attended.<sup>7</sup> At this meeting, "local interests, including Maricopa County, the cities of Phoenix and Scottsdale, and the Salt River Project (all represented by the Flood Control District of Maricopa County) presented a plan of improvement providing for channelization of Indian Bend Wash."<sup>8</sup> The "local interests" sought to minimize residential flooding, and prevent interruptions in the flow of traffic.<sup>9</sup> The proposed plan called for 16 miles of channelization following the Wash from the area of Bell Road and 48th Street to the point where the Indian Bend Wash and the Salt River merge.<sup>10</sup>

More than a year and a half later, on February 13, 1961, the Corps' Chief of Engineers authorized an "interim study" of the Indian Bend Wash.<sup>11</sup> This engineering survey was to study the flooding problem, analyze alternatives and make a recommendation to Congress.

## *First Steps*

The United States Army Corps of Engineers was established in 1775 during the Revolutionary War. Today the Corps provides engineering support to the U.S. Army and for civilian projects. On the civil side, the Corps is responsible for the development of water resource projects as well as operation and maintenance of completed water resource projects.

While official studies and planning were being carried out, private development in the wash area was continuing. A February, 1961 edition of the *Scottsdale Daily Progress* ran the headline, "Millionaire Apartments Granted City Approval." Rezoning had been secured for 90 luxury apartment units to be built on 10 acres. An adjacent 81 acres in the Wash was to be developed as an 18-hole golf course. The developer worked with the MCFCD to design the golf course so that floodwaters would drain through specially constructed and heavily planted earthen depressions.<sup>12</sup>

The Villa Monterey project, in the area between Chaparral and Camelback Roads, represented a first step towards development of what was to become the Indian Bend Wash greenbelt concept. The design of its golf course demonstrated that a grass-lined channel could control erosion, provide a natural escape for floodwater and still protect nearby homes.

By August, 1961 the Corps had developed two alternatives for solving the flooding problems posed by the Indian Bend Wash. The MCFCD presented these to the Scottsdale City Council on August 8.

The first, called the Evergreen Plan, provided for a 16-foot-high diversion levee to run from Mummy Mountain east to Evergreen Wasteway. The wasteway lies northeast of Mesa and empties into the Salt River. Under this plan a 2,200-foot-wide floodway would be created behind the levee. As a result, floodwaters would have been diverted across the Salt River Indian Community. The Corps found this alternative to have a good cost-to-benefit ratio (cost of project versus the benefit in reduction of estimated annual flood losses).

The second plan called for an 850-foot-wide natural channelization of the Wash. The cost/benefit ratio for this plan was not as favorable and it was not originally recommended by the Corps.<sup>13</sup>

After presentation of the two plans, Scottsdale City Manager Robert McNutt urged council members to make a decision. However, concern was voiced that neither members of the Salt River Pima-Maricopa Indian Community nor the United States Bureau of Indian Affairs would approve the levee plan because it would alter



areas of the reservation not currently affected by floodwaters. The matter was tabled until the council's next meeting.

On August 15, the council unanimously approved the levee plan to funnel water to Evergreen Wasteway. The plan would be less expensive for the city, but other considerations affected the council's decision. Certainly a major one was to avoid a concrete channel bisecting the town if alternatives existed.

The City Council had good intentions when it voted to support the Evergreen Plan. However, as some council members had anticipated, opposition killed it. During a subsequent August meeting, members of the Salt River Pima-Maricopa Indian Community and the Bureau of Indian Affairs strongly opposed the project. They emphasized the probability of adverse effects on future development of the reservation.

In a September, 1961 letter to Col. John C. Lowry, Chief Engineer of the Flood Control District of Maricopa County, the Corps referred to the "alternative plan involving channelization of Indian Bend Wash from the Arizona Canal to the Salt River."<sup>14</sup> The Corps' reasoning on this approach was that through proper land management, by restricting development, the Wash area north of the Arizona Canal could serve as a natural floodway. "The major flood problem along the Indian Bend Wash is below the Arizona canal where the Wash is poorly defined. Detailed consideration is being given to channel improvement in this reach."<sup>15</sup>

Following a meeting on December 19, the Corps reported, "The best plan of improvement would be a concrete lined trapezoidal channel extending along the existing Indian Bend Wash from the Arizona canal downstream to the Salt River."<sup>16</sup> The channel was to be designed to carry 40,000 cubic feet of water per second, the 100-year flood level at that time. It was to be 7 miles long, 140 feet wide across the top, 14 feet wide across the bottom and 25 feet deep, with side slopes of 2¼ feet horizontal and 1 foot vertical.<sup>17</sup> The top of the channel was to be level with the ground.

Original cost estimates for the plan are listed in Table 1.

Table 1

<b>Indian Bend Wash</b>	
<b>Original Cost Estimates, U.S. Army Corps of Engineers, 1961</b>	
Federal Costs	\$7,100,000 (for construction)
Local Costs	\$1,400,000 (relocation of streets, utilities, etc.)
<b>TOTAL</b>	<b>\$8,500,000</b>
Average Annual Charges	\$ 295,000
Average Annual Benefits	\$ 530,000
1.8 to 1 cost/benefit ratio. <sup>18</sup>	

The Corps was now committed to a plan that would solve the Indian Bend flooding problems through construction of a concrete channel. At the time, this was a standard Corps of Engineers solution to desert flooding. A concrete channel is an efficient means of carrying floodwaters and it provides the best possible soil erosion control. Use of a concrete channel also minimizes the land taken for the project and thus reduces right-of-way acquisition. But a broad expanse of concrete can be very ugly.

On January 23, 1962, Col. Lowry presented the Corps' alternate plan to the Scottsdale City Council. The council unanimously approved the alternative subject to final plans and congressional authorization.<sup>19</sup> Col. Lowry invited the council to a public hearing on the project scheduled for January 29.

While the city of Scottsdale made no statements at the public hearing on January 29, the city of Tempe protested the plan, hoping to gain assurance that it would not become the dumping ground for floodwaters.

When the hearing was reconvened on February 5, Col. Peattie of the Maricopa County Parks and Recreation Department offered some innovative ideas.

“(Col. Peattie)...requested the Board to consider whether or not there could be a multiple use of the flood control corridors for hiking and equestrian trails. He realized they were set up primarily to alleviate damage from 50- and 100-year floods. However, these same corridors could be used every day by

citizens going to and from the regional park systems and the open range areas. If this opportunity were considered now, it would later preclude a very costly acquisition of right-of-way for such purposes."<sup>20</sup>

Col. Peattie informed the council that he had checked with Corps officials and there were no known federal objections to the multiple-use concept. Other uses for the Wash were discussed. The County Manager said that the multiple use was new to him, and that others had suggested the Wash be used as a highway. The Arizona Horsemen's Association asked that the Wash be incorporated into a Valley-wide trails system.<sup>21</sup>

At the completion of the discussion, the Board of Directors of the MCFCD formally resolved that the Flood Control District would cooperate with the Corps in building a concrete channel if studies found the plan economically feasible and Congress granted authorization. Through this resolution, the county agreed to provide all necessary easements and rights-of-way; to pay for relocations (of streets, utilities, etc.); to provide maintenance and operational costs; to prevent encroachment that would reduce the flood-carrying capacity and to "hold and save the United States free from damages due to the construction works."<sup>22</sup>

These assurances of local cooperation were essential. Construction of the project could not begin without them.

On April 15, 1962, the Corps released its Interim Report on Survey for Flood Control, Indian Bend Wash, Arizona. The report describes the nature of the flood problem and notes that future floods would cause increasing damage as development expanded in the area. The report summarizes with "after consideration of plans proposed by local interests, the District Engineer finds economically feasible protection can be provided by construction of channel improvement."<sup>23</sup> The report recommends that the previously proposed seven-mile channel extend from the Arizona Canal to the Salt River with bridges at Camelback, Indian School, Thomas, McDowell and Van Buren Roads.

When the interim report was released, project cost estimates, based on November, 1961 price levels, had increased to:<sup>24</sup>

Federal	\$7,250,000
Local	\$1,770,000
TOTAL	\$9,020,000

### *First Steps*

The cost-to-benefit ratio remained at 1.8 to 1. Intangible benefits were listed as "large."<sup>25</sup>

During this stage of the project, Scottsdale's citizens seemed largely unaware of what was happening. There was no drive for an alternate plan; no citizens' group to move the City Council in another direction. The proposed development of land through the length of the town was overlooked by most people.

On November 20, 1962, Col. Lowry reported to the City Council that Senator Carl Hayden and Congressman John J. Rhodes had asked the Corps to expedite the Wash project. Col. Lowry expressed the hope that the project could be presented to Congress in 1963 for authorization and appropriation of funds.<sup>26</sup>

In a show of support, the Scottsdale City Council unanimously passed Resolution 235 on December 27, "endorsing the proposal for construction of a flood control channel through Indian Bend Wash."<sup>27</sup>

## CHAPTER 3

# The Greenbelt Idea

The people of Scottsdale awoke only slowly to the idea that maybe a concrete channel wasn't the only available solution for flood control—that maybe a park system could work as well or better.

Trying to determine who first thought of this “greenbelt” concept is virtually impossible. It may simply have been an idea whose time had come and it popped independently into the heads of a number of people at about the same time. L.B. Scacewater, longtime City Parks and Recreation Director who was born, raised and educated in the Scottsdale area, is one person who takes no credit for the idea. He says that people were already casually tossing the idea around in 1963 when he first came to work for the city.<sup>28</sup>

On January 20, 1963, representatives of the District Engineer held a meeting with representatives of the Maricopa County Department of Parks and Recreation, the MCFCD and the city of Scottsdale. The topic was “to explore the possibilities of incorporating park-like facilities in our proposed plan of improvement because Scottsdale is deficient in park facilities.”<sup>29</sup>

And indeed Scottsdale was short on parks. Eleven-year-old Tom Warner wrote to the *Scottsdale Daily Progress* saying, “I think that Scottsdale should have more than one park. Children would probably like swings, slides, trees, a stream, sand boxes, monkey bars. Parents would like to sit under trees, would like grass, no ants and no litter.”<sup>30</sup>

During November, 1963, the city investigated the purchase of about 39 acres of land near Jackrabbit and Hayden Roads. “The proposed flood control channel would pass through a portion of the land,” said (City Manager Ken) Williams, “but it would be usable immediately for baseball.”<sup>31</sup>

The same evening City Manager Williams was authorized to negotiate for this park/channel site, the council unanimously passed Resolution 300 endorsing the comprehensive county flood control

program as presented by the Maricopa County Flood Control District.<sup>32</sup>

On November 20, a public hearing was held on the comprehensive program by the Board of Directors of the MCFCD. A progress report on the Indian Bend Wash project indicated that it had Corps approval, was under consideration by the Secretary of Defense, would go on to the Bureau of the Budget and then to Congress. City Manager Williams said he was "happy to give Scottsdale's endorsement" and hoped the project would go ahead quickly. Tempe representatives, however, continued to protest the project, believing their city to be a planned "dumping ground." In spite of Tempe's concerns, the MCFCD Board voted to adopt the Comprehensive Flood Control Program Report.<sup>33</sup>

By February, 1964, momentum began to swing towards the greenbelt concept. Several events took place to give it support. One was that Scottsdale retained Eisner-Stewart and Associates, a California-based firm, to assist in the preparation of a master plan for the city's growth.<sup>34</sup> Another was the first expression of public support to appear in print.

In the February 6 *Scottsdale Daily Progress*, William Walton's guest editorial, "Scottsdale Told: Plan for Parks," compared the potential of the Indian Bend Wash with that of Central Park in New York City. Walton advocated a "turfed channel" with recreational amenities such as bridle paths. He urged city leaders to buy the land in the path of the flood-control project and "make it into a unique and outstanding park area for Scottsdale."

The ideas presented in the editorial spurred the Scottsdale City Council to ask Walton to head a special Indian Bend Wash committee. Other committee members included Dr. Morgan Johnson, City Civil Engineer; L.B. Scacewater, City Parks and Recreation Director; Marie LeVang; Marc Stragier, City Public Works Director; William Schrader, former Scottsdale mayor; Billie Axline Gentry and other representatives of civic-minded groups.

Six weeks of meetings went into the committee's report which was presented to the City Council on July 21. The report addressed four major questions concerning the greenbelt idea:

1. Would the Corps be willing to change plans?
2. What would the comparable cost be?

3. How would property owners feel about having to donate a larger portion of their land for flood control?
4. What recreational purposes could the area serve?<sup>35</sup>

As to the Corps, the committee received assurances from Seldon "Skip" Kramer that it was not too late to make a study. With that taken care of, the committee determined that cost of a terraced channel was the main concern, because otherwise, "the combination of recreation and flood control is very feasible."<sup>36</sup>

On the issue of property owners, the report suggested the possibility of donating land to the city in exchange for "zoning or other means to raise the value of their remaining property."<sup>37</sup> It was this incentive approach, as it was later developed, that proved to be the key to making the Indian Bend Wash greenbelt financially possible.

The committee's report emphasized that "a concrete lined channel 172 feet wide and fence-lined would divide the City of Scottsdale to such a degree and in such proportion that the division could never be overcome."<sup>38</sup> Therefore recommendations included appropriating funds for a feasibility study to consider the combination of flood control and recreation. As a final admonition, the report said "the City of Scottsdale cannot afford to let this opportunity go by."<sup>39</sup>

And fortunately, the city didn't.

By the time the Walton committee had submitted its report to the City Council, the City Parks Commission had directed Parks and Recreation Director Scacewater to study the Foxworth/Galbraith property for possible purchase. This property is south of Thomas Road and east of Coronado High School, and sits in the path of the Wash. It is now the site of Eldorado Park.

On August 4, City Manager Richard Malcolm provided the City Council with an update on the prospects for the Indian Bend Wash. It was assumed that Congress would authorize the project in 1964 and voters could respond to a county bond election by 1965. With these deadlines in mind, City Manager Malcolm pointed out that if an alternate recreation/flood control plan were to be offered, work must proceed quickly.

Two tasks required completion before an alternative could be proposed formally: a cost and engineering feasibility report and determination of the Corps' response to the proposed alternative.<sup>40</sup>

The City Council met with other agencies during this period and an alternative to the concrete channel was discussed. The prospect

### *The Greenbelt Idea*

was not well received. The Corps and the MCFCD told city representatives that "plans for the \$9 million channel have progressed too far to make extensive alterations."<sup>41</sup> Mayor John Woudenberg responded that "the only thing the flood control group is interested in is control of water at the lowest possible dollar...they are not interested in the park and recreational area."<sup>42</sup>

Pressure mounted to abandon the proposed alternative. But the Scottsdale City Council did not cave in. Council member Dr. Bud L. Tims pointed out that "the discouraging reaction was not unexpected." Planning Director George Fretz referred to the Indian Bend Wash as "the most important unimproved asset in the City."<sup>43</sup>



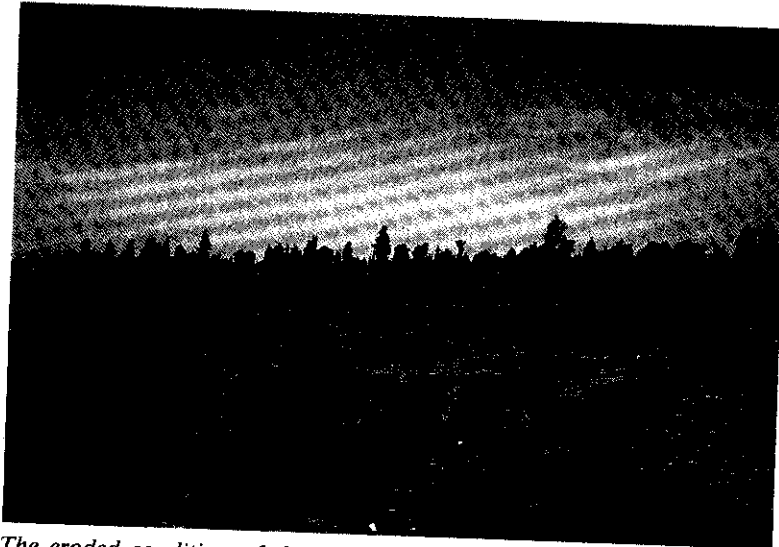
# Photographs

City of Scottsdale photo



*Two local youths proudly display their bounty of rabbits from the old "slough", as it was commonly known at the turn of the century.*

City of Scottsdale photo



*The eroded condition of the Indian Bend Wash floodplain prior to the greenbelt's development.*

City of Scottsdale photo

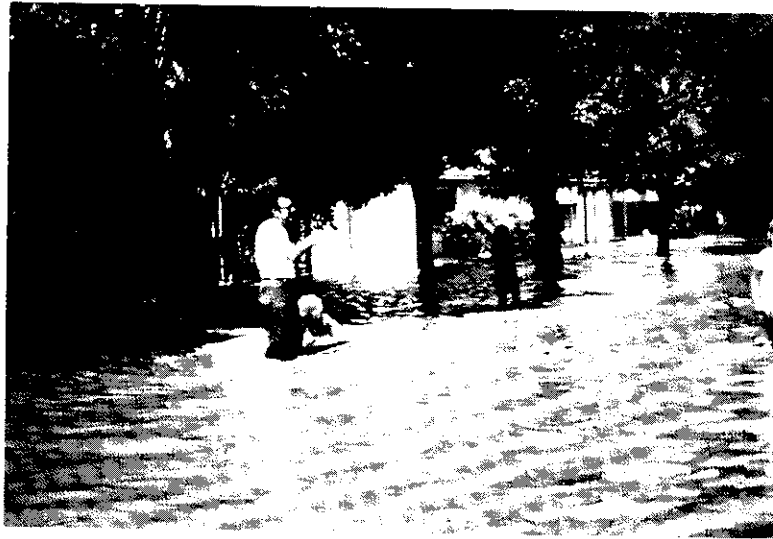


*Above and below: Uncontrolled floodwaters rampaged through the community in 1972 prior to the completion of the Indian Bend Wash project.*

City of Scottsdale photo



City of Scottsdale photo

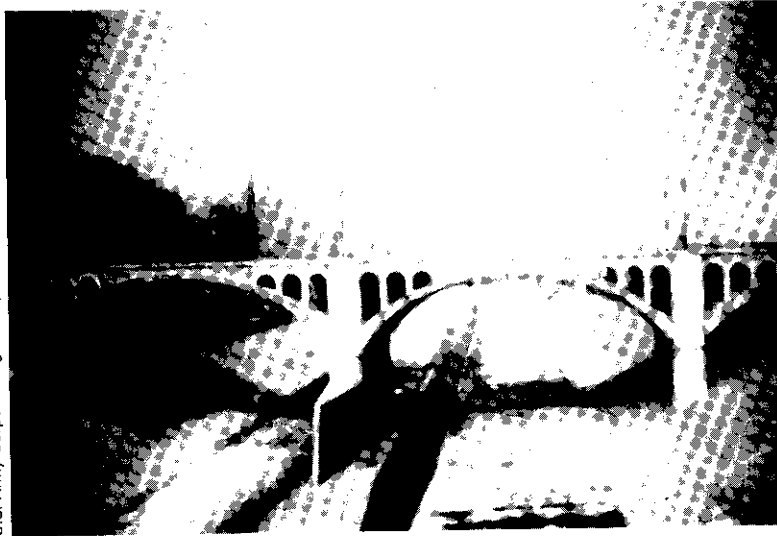


*Above and below: Emergency rescues and the threat to life and property were unpleasant realities Scottsdale residents faced prior to completion of the project.*

City of Scottsdale photo



U.S. Army Corps of Engineers photo



*An early proposal suggested a concrete channel similar to the sometimes-rushing, sometimes-dry Los Angeles River Canal.*

Anita Noldurft Hopkins photo



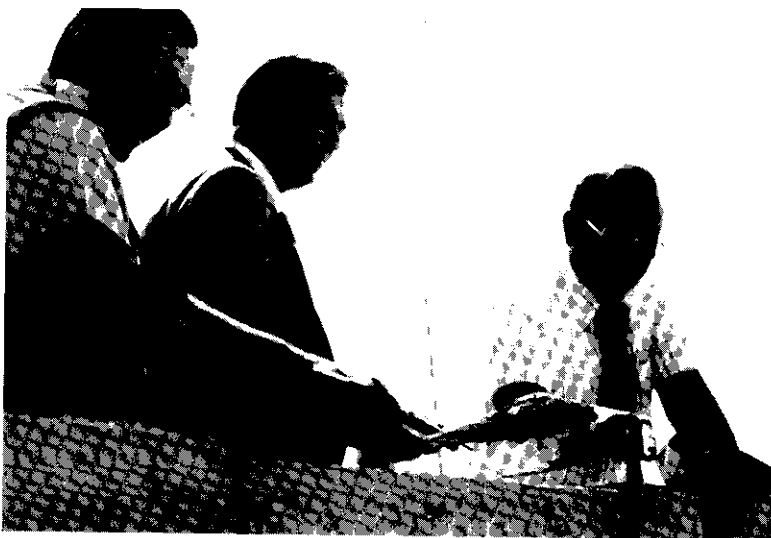
*The 17-foot project relief model at the Indian Bend Wash Visitor Information Center in Indian School Park provides an interesting perspective of the innovative flood-control project.*

City of Scottsdale photo



*Teamwork among City officials, the Army Corps of Engineers, many public agencies and involved citizens was key to the successful completion of Scottsdale's oft-cited greenbelt.*

City of Scottsdale photo



*Congressman Eldon Rudd assists City and Corps officials in dedicating the McDowell Exhibit Plaza.*

City of Scottsdale photo



*Arizona Congressman John Rhodes actively supported the necessary funding for the project.*

City of Scottsdale photo



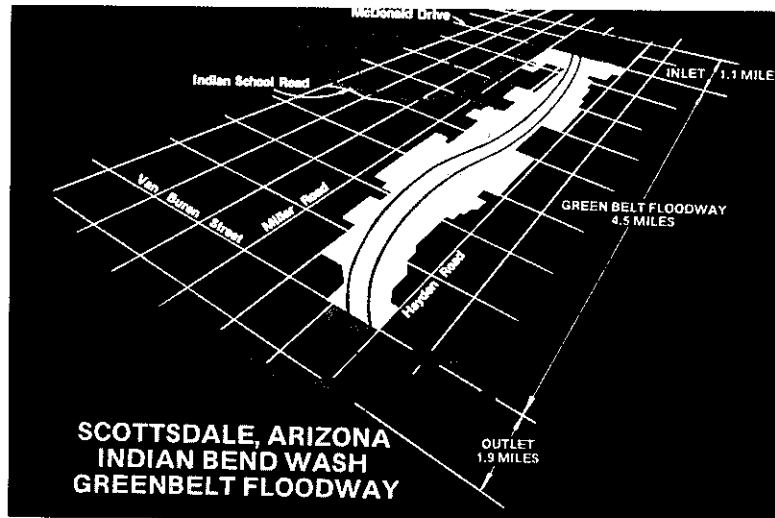
*Eight miles of bicycle trails have been dedicated for public use throughout the project.*

U.S. Army Corps of Engineers photo



*The success of Scottsdale's public and private sector partnership was primary to the eventual completion of this ambitious project.*

U.S. Army Corps of Engineers photo



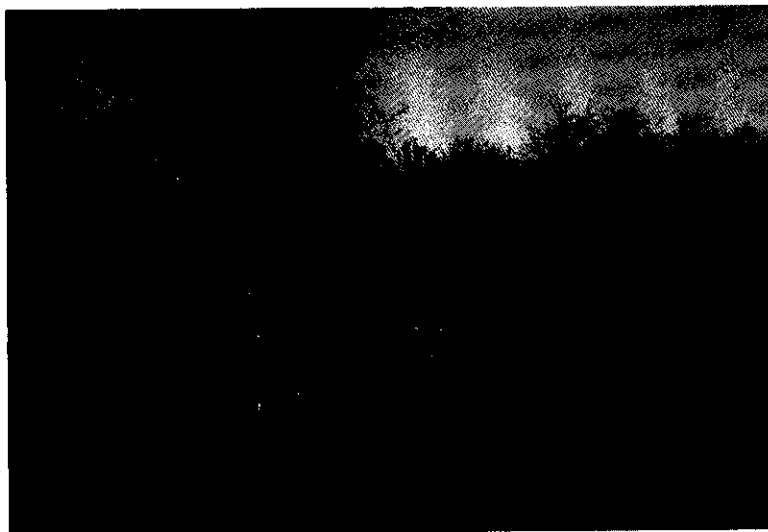
*Irrigation waters of the Arizona Canal traverse the width of the project at its northern reaches via a protective siphon, ensuring the integrity of the canal system.*





Ted Hill photo

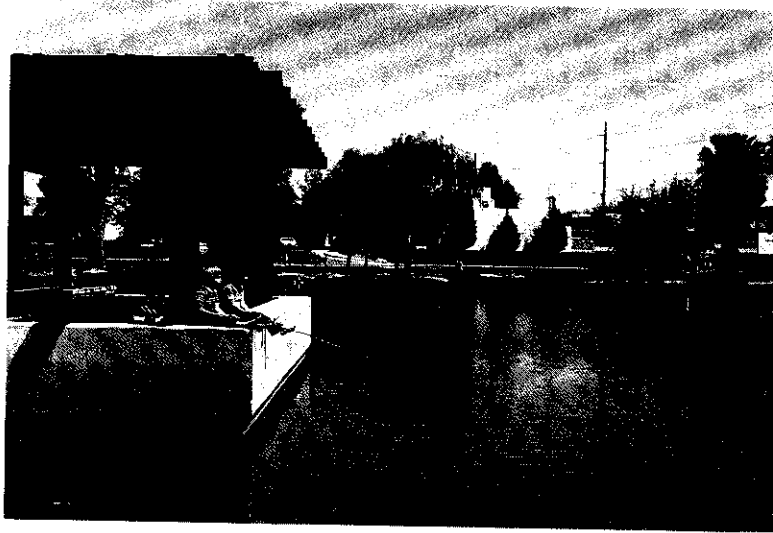
*Picnic area in mesquite grove upstream from the McDowell Exhibit Plaza.*



Ted Hill photo

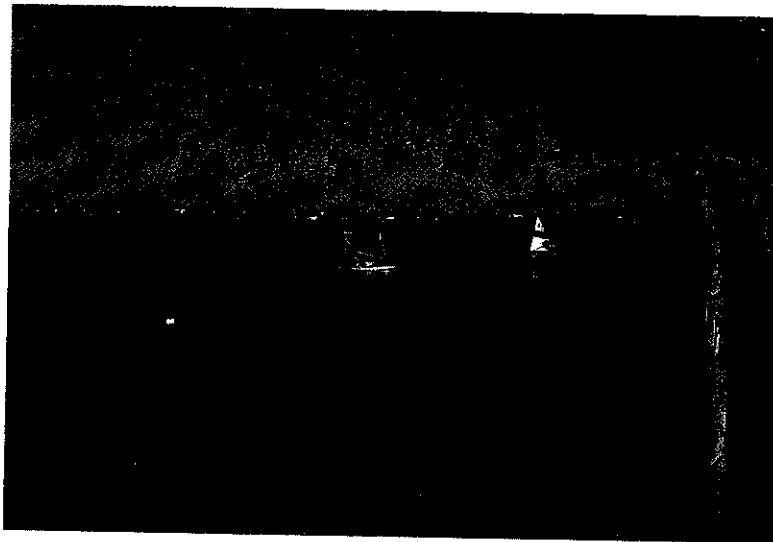
*Bicyclists of all ages enjoy the beauty and open spaces of Eldorado Park. The meandering bicycle trail system is also an effective transportation network.*

Ted Hill photo



*The Indian Bend Wash greenbelt provides numerous recreational opportunities for urban families.*

Ted Hill photo



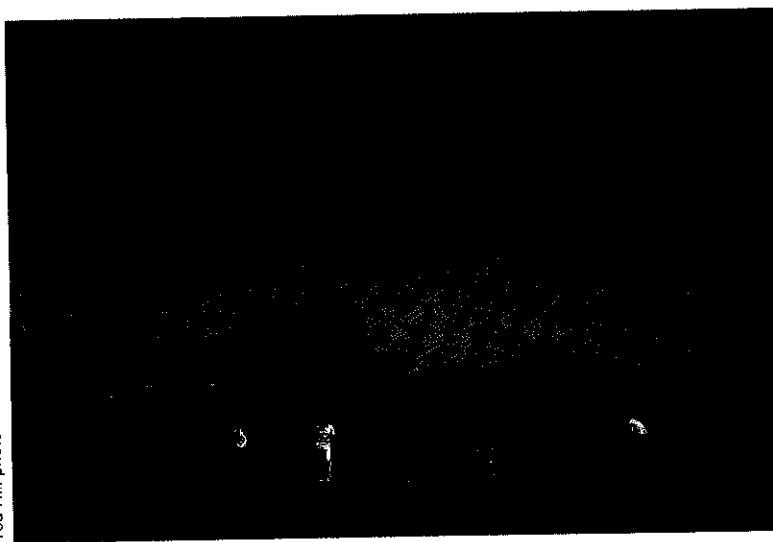
*McKellips Lake, immediately north of the outlet of Indian Bend Wash.*

Ted Hill photo



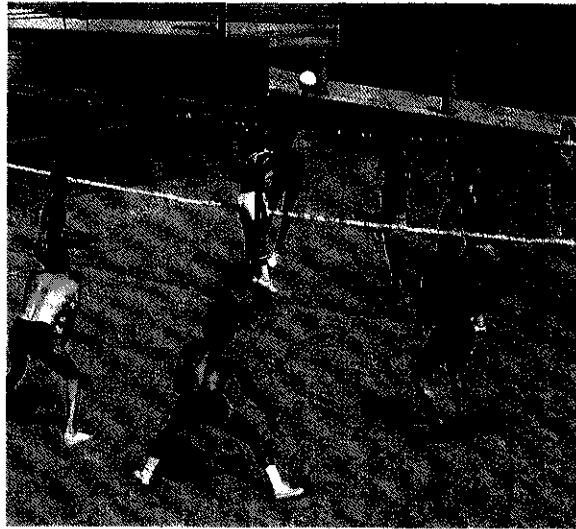
*The Interceptor Channel Nature Area is part of the project's environmental mitigation. Public access is through an interpretive wildlife preserve.*

Ted Hill photo



*Numerous golf courses are provided to citizens throughout the length of the 7½-mile greenbelt.*

Ted Hill photo



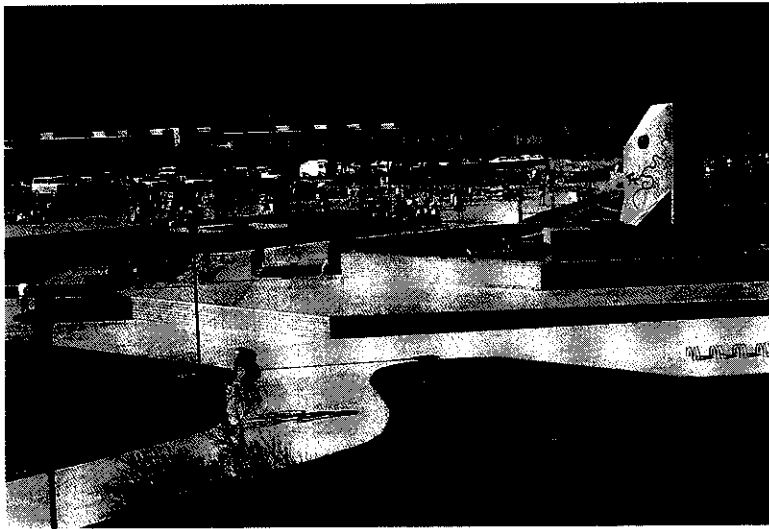
*Volleyball courts at Indian School Park. The park is also the location of the Indian Bend Wash Visitor Information Center with its interpretive project history and displays.*

Ted Hill photo



*The innovative break-away backstops at Indian School Park. Upon impact with floodwaters, the backstops swing open in a gate-like fashion.*

Ted Hill photo



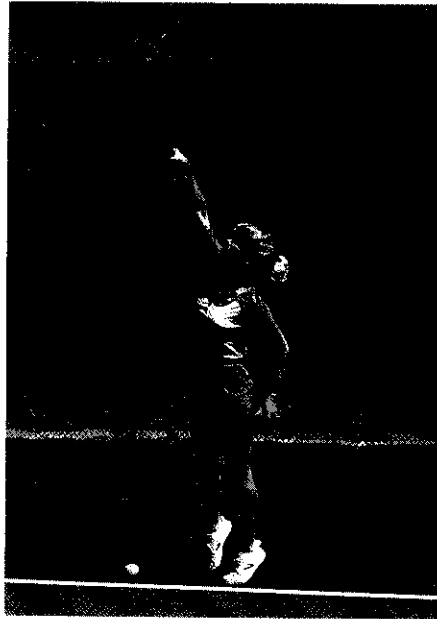
*As a showcase for outdoor exhibits, fairs and other community gatherings, the McDowell Exhibit Plaza is one of the main features of the Indian Bend Wash flood-control project. It is also the keystone to many complex engineering solutions in the Wash.*

City of Scottsdale photo



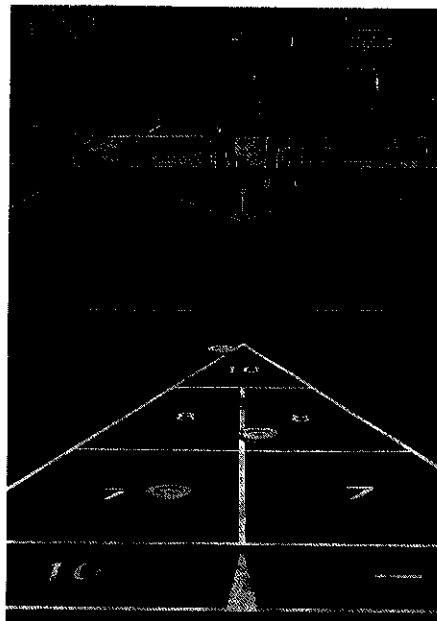
*The Greenbelt plays host to a variety of community events every year.*

Ted Hill photo



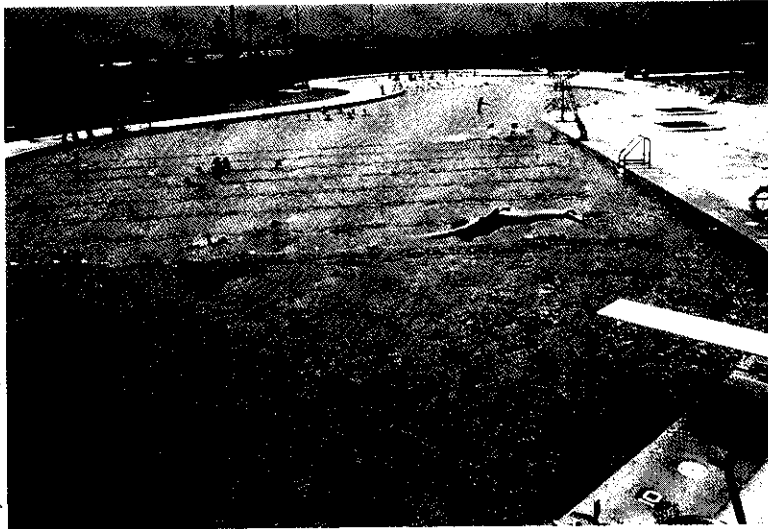
*Tennis at Indian School Park. This facility is a community and project focal point to residents and visitors alike.*

Ted Hill photo



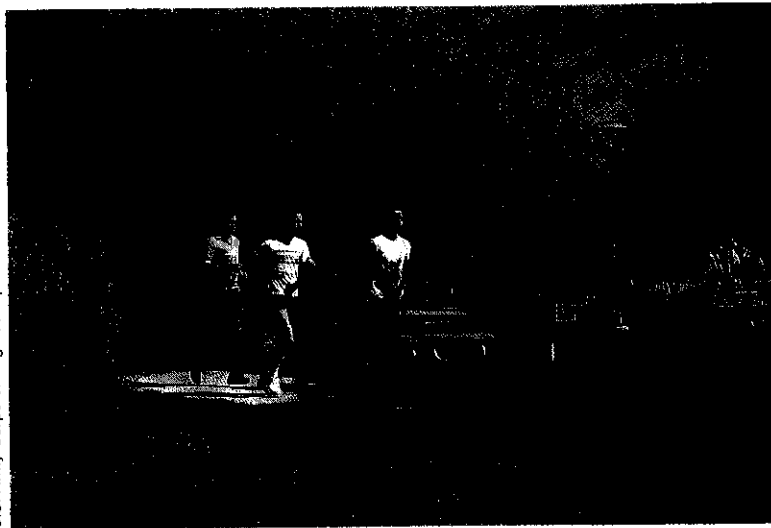
*Lighted shuffleboard courts at Indian School Park.*

City of Scottsdale photo



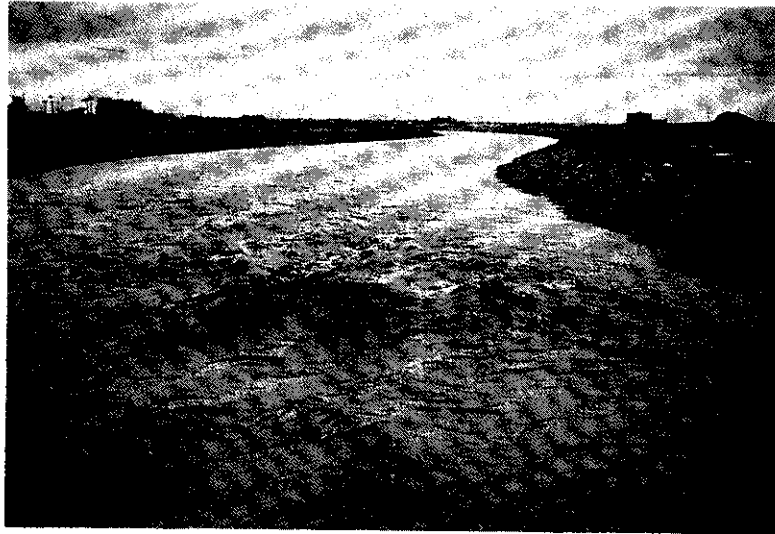
*Arizona's largest free-form public swimming pool at Chaparral Park.*

U.S. Army Corps of Engineers photo



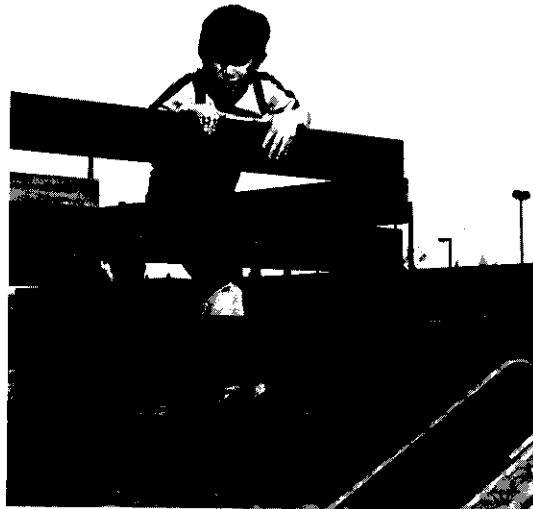
*The 54-acre Eldorado Park-just north of the McDowell Exhibit Plaza-makes an attractive use of an existing mesquite grove.*

City of Scottsdale photo



*Controlled floodwaters successfully channeled through the greenbelt into the outlet (shown above) and into the Salt River bed to the south.*

Bill Mclemore photo



*Once a dangerous floodplain, the Indian Bend Wash is now a greenbelt parks systems providing a variety of family-oriented recreational activities.*



Landis Aerial photo



*Scottsdale's Indian Bend Wash greenbelt forms a 7½-mile swath of recreational open-space through the heart of the community.*

## CHAPTER 4

# Time for Action

City officials did more than just talk; they took action. Letters were sent to all owners of Wash property as the first step towards possible land acquisition.<sup>44</sup>

On October 6, 1964, the council unanimously approved Resolution 348 which formalized a two-year-old council policy regulating development in the Wash. Basically the resolution instructs city officials not to issue construction permits for areas between the limits of the 40,000 cubic feet per second (cfs) flow as identified by the Corps. Exceptions could be made based on the following criteria:

1. Construction between the 20,000 and 40,000 cfs levels is permitted provided properly constructed fills are made to the level of 40,000 cfs.
2. Construction of golf courses, parks, cultivated areas and similar facilities will be permitted provided the capacity of the channel is not materially reduced and no hazardous concentration or diversion is created.
3. Construction is permitted wherever proper care is taken to preserve the capacity of the waterway and no substantial hazard to adjoining property is created.

Resolution 348 was the first step towards eventual formulation of the essential Indian Bend Wash ordinances.

At about this time, a new program was developed that radically changed the scope of planning for Scottsdale's future. In September, City Manager Richard Malcolm proposed the Scottsdale Town Enrichment Program, STEP for short. The program would establish committees of citizens, council members and staff advisors to study seven areas of civic growth and recommend a three-year plan for capital improvements. Two of the committees, Public Works and Parks, Recreation and City Beautification, addressed the problem of Indian Bend Wash.

With the formation of the new committees, the Parks and Recreation Commission, which had been working towards the acquisition of Wash land, agreed to postpone further recommendations.<sup>45</sup>

Conclusions reached by the STEP Committees were crucial to the eventual outcome of the greenbelt. To understand the process, it is important to look at the makeup of the two committees that affected the Wash decisions.

The Corps' Col. John Lowry served on the Public Works Task Group. Lowry was a longtime supporter of the concrete channel and head of the MCFCD. The task group members leaned his way. The group's storm drain subcommittee said, "in effect, the Indian Bend channel must be built before we can build a system of storm drain laterals discharging into the Indian Channel."<sup>46</sup> The subcommittee recommended "that the City start a public relations campaign backing the Indian Bend Wash (concrete) Channel Project."

On the other hand, the Parks, Recreation and City Beautification Group sought an alternative to the channel which would serve recreational purposes. Included in this group were council members Dr. Tims and John Senini, Jr.; Parks and Recreation Commissioner Glenn Crisp; Parks Director Scacewater; Billie Axline Gentry and other citizen participants from city service organizations.

Even though government experts insisted that a ditch was the only way to solve the Wash problems, the parks task group recommended "that the major portion of this IBW area be reserved for park purposes and that any development that takes place leads to this end." Mrs. Gentry observed that "we are creative people here in Scottsdale and this canal does not have to be built like an open pit." Joe Strickler, another citizen group member, put it this way: "if you don't vote for this project, your kids will be known as the kids from the wrong side of the sewer."<sup>47</sup>

The parks group agreed to act on the priorities of land acquisition and submitted these recommendations to the City Council:

1. Two 100-acre parks in or near the Indian Bend Wash.
2. Two 10-acre lagoon parks.
3. Five neighborhood parks.<sup>48</sup>

As 1964 drew to a close, the *Scottsdale Daily Progress* wrote about "Indian Bend Park." Although believing that the idea had merit, the paper stated that "it will die unless there is strong public backing."<sup>49</sup> Fortunately, work of the STEP Committee served to rally the necessary support, although not quickly or easily.

In January, 1965, the Parks and Recreation Commission agreed that the STEP Committee's conclusions, as drawn by the Parks and Recreation Task Group, were ones it had been advocating for three years.<sup>50</sup> In March, William Walton was appointed to the Parks and Recreation Commission and a new Indian Bend Wash Committee was formed. This committee emphasized that Scottsdale must be responsible for the development of the Wash since the city suffered the flood damage and would benefit from changes. City officials must be aggressive and not leave the initiative to others.<sup>51</sup> The Wash Committee also met with county officials to discuss a cooperative effort for the development of the Wash into a multi-use flood control and recreation area.

In late June, the Scottsdale Parks and Recreation Commission submitted a recommendation to the City Council supporting the STEP Committee's idea to acquire as much land as possible for parks. In July, council member Tims reported to the commission that \$1,438,000 for park acquisition had been included in the upcoming bond election program.<sup>52</sup> On September 28, voters approved the money for parks. Land to be acquired included the 55-acre Foxworth/Galbraith property near Coronado High School and 70 acres near Saguaro High School, both sites in the Wash.

On October 5, 1965, in a decision of far-reaching impact, the Scottsdale City Council unanimously approved a motion by council member Dr. Tims to authorize engineer John R. Erickson to conduct an independent study and analyze the program planned for the Wash by the Corps of Engineers.<sup>53</sup> From this authorization ultimately came the "Erickson Plan," the first real engineering study for a greenbelt alternative. The plan established the engineering and economic feasibility of a greenbelt. It represented the city's commitment to a technically sound solution to the flood control problem and provided the Corps with a basis for study. It was a key piece of the Indian Bend Wash puzzle.

While the STEP Committees, the Scottsdale Parks and Recreation Commission and city staff proceeded under the assumption that a greenbelt floodway could work in the Wash, the county and federal governments had a different understanding.

The concrete channel alternative came a step closer to reality when it gained formal congressional authorization with passage of the Flood Control Act of 1965 (Public Law 89-2989) on October 27, 1965. Only one step remained before construction of the concrete channel could begin. And that was allocation of a portion of the

costs of land acquisition, easements, right-of-way, relocation of streets and utilities and operation and maintenance costs. Unless the Corps was assured that a responsible local agency would provide these funds, the project would be dropped. As the legal sponsor of flood-control projects with federal participation, the MCFCD had to come up with the money.

To raise the funds, the Flood Control District called a county-wide special bond election for March 8, 1966, to support the sale of \$22,679,000 in bonds. These bonds would provide the county's share in \$115,000,000 of county flood-control projects. A priority project was the Indian Bend Wash channel.

The election was controversial and generated much publicity. The *Scottsdale Daily Progress* endorsed the election because Scottsdale had received indications that the Corps would allow the city to review final plans.<sup>34</sup> The Scottsdale City Council endorsed the program and supported the election.

But the bond election was soundly defeated, by a three-to-one margin at the county level. No funds, no channel. Scottsdale was on its own for flood control but with no specific powers from state legislation or city charter to adequately regulate development in flood-prone areas. As a result, city leaders faced a fragmented approach to development of the Wash.

A serious complication was the amount of local effort and funds needed to acquire land and build the channel. The amount of water entering the Wash was great and the land thus involved was extensive. If the project were to be economically feasible, a plan was needed to cut water flow.

While the merits of the bond election were being debated and voted on, engineering consultant John Erickson produced a preliminary report indicating that Scottsdale had three alternatives:

1. Accept the Corps' plan for a concrete lined channel.
2. Reject the Corps' plan and rely instead on zoning and local effort to build a greenbelt.
3. Try to modify the Corps' plan and induce the Corps to participate.<sup>35</sup>

Although not apparent at the time, a big piece of the Wash puzzle was maneuvered into place August 22, 1966. The city broke ground for the 55-acre park near Coronado High School. Authorization for acquisition of this property had been given earlier by voters.

To create Eldorado Park, bulldozers moved earth to form a depressed middle with higher edges, defining a channel for greater

control of floodwaters. The park was planned to serve as the spring practice area for the Chicago Cubs as well as providing picnic, athletic and swimming facilities. Scottsdale had been a training ground for professional baseball teams since the mid-fifties.

On September 13, 1966, nature provided clear evidence of the immediate need for flood control. A disastrous flood hit the city. The impact of the water was so severe that the Arizona Canal was breeched and its water poured into the Wash adding substantially to the volume. The city was literally split in two for several hours. Property damage was extensive, particularly in the Vista Del Camino area.

Vista Del Camino "was characterized by its location in a flood plain, inadequate and sub-standard housing, low income families... It was first settled by Yaqui Indians who were refugees from the Mexican Revolution and who do not qualify for protection from the United States Bureau of Indian Affairs. In the mid-fifties the Yaquis, attracted by the low cost of land, migrated to Vista while working for a local utility company."<sup>56</sup> The residents of Vista, living in the Wash in substandard housing, were easy targets for extensive flood damage.

With voter disapproval of money for the concrete channel, city officials had no choice but explore alternatives to control the Wash and its flooding.

## CHAPTER 5

# Alternatives Emerge

Eisner-Stewart's Comprehensive General Plan was released in December, 1966. It provided guidelines for alternatives and developed the concept of "incentive zoning" which would benefit both the city and developers. The concept applied mainly to property along the fringe of the Wash. Usually this property was partially in the Wash and partially on high ground. Under the General Plan, property owners could dedicate to the city the part of their Wash land that flooded. To compensate for this loss, developers would be permitted to build more units on their remaining property. The plan also endorsed development of "an integrated system of parks in Indian Bend Wash."<sup>57</sup>

City officials expanded on this concept. They reasoned that property owners would have more property on which to build if dirt were moved from the center of the Wash to the fringe. And by planting grass to control erosion, the wandering floodplain could be better controlled. This approach to flood control became economically feasible to the city when private developers were required to make channel improvements.

In the meantime, engineering consultant Erickson began preparing a plan for upstream dams to reduce the flow of water in the channel through Scottsdale with open space to store peak flow. And the Corps considered modification of its authorized project to participate in the city's plans. Because quick action was needed, the Corps was encouraged to modify its plan rather than conduct a complete restudy which would take at least eight years.<sup>58</sup>

In November, 1967, Scottsdale citizens approved an amendment to the City Charter giving the city power to "designate and establish floodways..."<sup>59</sup> For the first time, Scottsdale had the power to adopt strict ordinances governing the development of Indian Bend Wash.

In December, John Erickson and Water Resources Associates released their "Flood Control Feasibility Report." This landmark

### *Alternatives Emerge*

report recommended construction of two detention dams in the upstream area, and a downstream earthen channel incorporated into the greenbelt. The impact of this report was enormous. It gave structure and substance to a truly innovative concept.

Meetings were held with the Corps to elicit their support. It was expected that in addition to dealing with flood control, the greenbelt would increase total valuation of taxable property in Scottsdale and possibly reduce the tax rate.<sup>60</sup>

To underscore the urgency of the situation, another major storm unleashed its fury on Scottsdale in December, 1967. Water again divided the city.

But the wheels of government sometimes move slowly. The Corps determined that \$50,000 and seven months would be needed to make a preliminary study of the Erickson Plan and determine its feasibility.<sup>61</sup> Thanks to the efforts of Congressman John J. Rhodes, the Corps finally received the money and began its study in November, 1968.

On February 6, 1968, John Erickson officially presented his feasibility study to the Scottsdale City Council. The same evening, the council passed Ordinance 367, the first Indian Bend Wash ordinance. The ordinance regulated construction in the Wash under authority gained in the 1967 charter amendment election. Under this regulation, no construction could take place within 40,000-cubic-feet-per-second water-flow limits except when the flood-carrying capacity of the channel was preserved. The burden of proof of compliance in each instance rested with the developer. A fine and/or a jail sentence could be imposed on violators.

The significance of the ordinance was that it permitted developers to begin carrying out the greenbelt concept immediately. By moving dirt from the low area to the edges and improving the channel with grasses to prevent erosion, a developer could maintain the water flow capacity of the channel while enlarging the construction site. These principles had been successfully demonstrated in the construction of Eldorado Park and its use through two floods.

In exchange for free city easements in the floodplain, the developer would be granted higher-density zoning by the city. Construction could begin without waiting for approval from all appropriate levels of the federal government. Perhaps best of all, developers' improvements would not cost tax dollars.

The city's Parks and Recreation Commission stayed with the greenbelt concept through 1968. They discussed buying land near



### *Alternatives Emerge*

Hayden and Jackrabbit Roads and developing pool facilities (where Chaparral Park is today). The commission applied for Land and Water Conservation Funds from the Arizona Outdoor Recreation Commission. With these funds to match city funds, parts of Eldorado Park were turned into an urban campground.<sup>62</sup>

## CHAPTER 6

# Urban Renewal Launched

By early 1969, the Indian Bend Wash project appeared stagnated. The Corps' studies were incomplete and modification of the existing channel plan was not in sight. Unwilling to sit back and wait, however, the city launched an urban renewal program with applications to the United States Department of Housing and Urban Development (HUD) and one to the United States Department of Labor to "completely eliminate urban blight in Scottsdale."<sup>63</sup> All applications were approved within 90 days. "The integrated grant approach was an innovation in 1969 and served as a forerunner to the Community Development Block Grant legislation five years later . . ."<sup>64</sup>

The approach was twofold: to redevelop both the downtown area and the low-income Vista Del Camino neighborhood. By removing threatened buildings and redeveloping portions of the Wash channel, the city expected to keep the greenbelt concept progressing.

In 1970, Scottsdale faced a new problem. The Corps of Engineers had completed a study of the Erickson Plan and found it feasible. However the Corps rejected the intent of the project to provide protection from the 100-year flood of 40,000 cubic feet per second. Instead, they determined that the plan should protect property from the Standard Project Flood (SPF), which was 72,000 cubic feet per second for the Indian Bend Wash. Reasons given for providing the additional protection included hazards posed by the proposed reservoirs which were an integral part of the Erickson Plan.

To protect against the Standard Project Flood greatly increased the amount of land needed behind Erickson's proposed detention dams. Land acquisition costs suddenly became prohibitive and Scottsdale again faced the prospect of no federal support for flood protection.

Fortunately a new possibility surfaced. Already in the planning was construction of the Central Arizona Project (CAP) by the

### *Urban Renewal Launched*

Bureau of Reclamation. The Bureau is an arm of the federal government responsible for construction of facilities that deliver water. The CAP is a monumental irrigation project designed to funnel Colorado River water from Parker, Arizona on the river, through Phoenix to Tucson. The CAP plan included construction of Granite Reef Aqueduct to be located upstream from the Wash problem areas. It appeared that the detention basins proposed by Erickson could provide protection to the aqueduct.<sup>65</sup>

A hitch in this approach came from another federal department, the United States Bureau of Outdoor Recreation. The Bureau at that time was "moving rapidly toward a policy of requiring that waterways through urban and suburban areas be constructed as underground pipelines."<sup>66</sup> If the Granite Reef Aqueduct were built underground, it could not serve to cut off water flow into the Wash and thus provide flood control to Scottsdale. To ensure that the aqueduct and detention dikes would be built above ground, the city would have to work closely with Bureau officials.

Regardless of which plan ultimately was selected, it was obvious that Scottsdale would need additional funds to pay for it. One approach was to hold a special election on December 15, 1970, to raise sales tax by one percent. Despite the memory of September's flood, opposition was organized by the Committee Opposing Scottsdale Tax (COST) and citizens voted down the tax.

With defeat of the sales tax measure, Scottsdale was again without funds and a flood control plan. Mayor Bud Tims called a special public hearing on January 18, 1971, and asked for new ideas for flood-control implementation. But no luck. In a subsequent memo to the City Council, Mayor Tims recommended that the city proceed with flood gates at the Arizona Canal, participate in HUD's flood insurance program, continue incentive zoning policy and use available money to acquire land in the Wash.<sup>67</sup>

Although Scottsdale still could not approach the Indian Bend Wash puzzle as a whole, the city was doing the best it could one piece at a time.

Flood gates for the Arizona Canal were a major concern. In June the MCFCD voted to make \$107,000 available to Scottsdale for the gates.<sup>68</sup> The Salt River Project, a nonprofit utility providing electricity and water to the metro Phoenix area, offered to expedite the matter by undertaking the construction.<sup>69</sup> But the problem of acquiring downstream rights-of-way so the gates could be opened once constructed remained unsolved.

Meanwhile Scottsdale officials continued to meet with representatives of the Corps to find a mutually acceptable solution to the Corps' feasibility requirements. With hard work by city staff members and Corps personnel, the two groups gradually reached agreement.

Having gained city support, the Corps agreed to make every effort to expedite its modified plans through the federal government. In the meantime, Scottsdale agreed to continue its floodplain management approach and search for funding sources. On January 28, 1971, the Corps mailed its "Notice of Initiation of Post Authorization Planning Studies,"<sup>70</sup> initiating the process of review and development of a plan more suitable to current needs.

During 1971 the city purchased 8.3 acres of land on the east side of the Wash in Vista Del Camino as part of its urban renewal program. The channel was excavated, a large pad for housing was constructed and 53 single-family homes were built. By mid-June, 1972, all Vista residents, except those waiting for rental units, had fortunately moved from the floodplain.<sup>71</sup>

## CHAPTER 7

# 1972: Disaster Strikes and Scottsdale Responds

On June 22, 1972, disaster struck the city. A 70-year flood, the most disastrous in the city's history, swept through the area. Water backed up behind the Arizona Canal causing serious property damage. Guests were evacuated from a resort hotel located close to the canal. Some floated suitcases through the hotel's parking lot. Breaks occurred elsewhere in the swollen canal, adding to the flood problems. Again the city was divided by raging waters.

The new homes in Vista Del Camino were unharmed, but old structures still in the Wash were destroyed. Seventeen Vista families were left homeless. City workers used helicopters and ropes across the flooded Wash channel to rescue residents.

A man from Detroit was reported drowned in the floodwaters. Property damage was in the millions of dollars. The need for flood control in Scottsdale had never been so dramatically evident.

In an effort to prevent another such disaster, the Scottsdale Public Works Department prepared in July a four-phase, flood-control and storm-drain plan for capital improvements. The City Council approved phase I and added two engineers to the project in November.<sup>72</sup> In December, after a public hearing, the council agreed to use federal revenue-sharing funds for flood-control projects.<sup>73</sup> Also during December, the Maricopa County Flood Control District approved a study for a siphon of the Arizona Canal under the Wash. The siphon would allow floodwaters to enter the Wash unimpeded, reducing the problem of water backing up behind the canal.

In February, 1973, the City Council called a special flood control bond election for April 10. To implement the proposed four-phase plan, voters were asked to approve the sale of \$10,000,000 in general obligation bonds to finance flood control and storm drain projects.

*1972: Disaster Strikes And Scottsdale Responds*

With two disastrous floods in recent memory (1970 and 1972), voters approved the bonds with a seven-to-one margin.

In August, the city authorized a contract with the MCFCD for joint development of the Indian Bend Wash.<sup>74</sup> An intergovernmental agreement, signed on July 24, 1973, provided \$600,000 from the Flood Control District to begin acquisition of additional land and improvements in the greenbelt floodway (from McDonald Drive to north of McKellips Road).

## CHAPTER 8

# Army Backs Greenbelt Project

On September 12, a public meeting was held by the Corps of Engineers to unveil its new plan. In developing it, the Corps considered six alternatives. After evaluating all information, the Corps recommended an alternative combining structural and non-structural features with the addition of recreation as a specific purpose of the project. It incorporated ideas from the Erickson Plan, the Central Arizona Project, the city's four-phase plan and input from city staff.<sup>75</sup>

The new flood-control project contained four main elements. The first was an inlet area consisting of an unlined channel from Indian Bend Road to McDonald Drive, a siphon of the Arizona Canal under the Wash and an interceptor along the north bank of the canal to funnel waters to the inlet area. The second feature was the greenbelt floodway to be developed by the city of Scottsdale. Third was an outlet to collect the flows below Roosevelt Street and carry them into the Salt River. The final element was a system of side channels to collect water that backed up along the upstream side of the Arizona Canal and funnel the water to the Wash. The Corps abandoned its earlier requirement of protection for the Standard Project Flood due to the cost and the fact that Scottsdale had already developed much of the greenbelt in keeping with the 100-year flood line.

The federal government also announced plans to participate in construction of the recreation facilities. These included a biking and hiking trail from the canal to the river, an equestrian trail in the inlet area, two rest areas with comfort stations, a park near Indian School Road and a fishing lake near the outlet.<sup>76</sup>

The government proposed to fund the flood control features plus pay one half of the cost of recreational features. Local interests would pay for lands, easements, rights-of-way, relocations, flood-

## *Army Backs Greenbelt Idea*

control features in the greenbelt floodway, and one half of the recreational costs plus operational and maintenance costs.

The response was overwhelmingly positive to this amended plan from the Corps. Col. John Lowry of the MCFCD expressed his pleasure at being able to endorse it. He praised the Corps for going "beyond the call of duty in redesign required" and being "truly sensitive . . . to the local spirit."<sup>77</sup> He also reminded the audience that the city had forged ahead with the greenbelt/flood-control program even when there was no other help available.

Government officials were not alone in their praise of the proposed plan. The Grand Canyon Chapter of the Sierra Club expressed enthusiastic support:

"This demonstrates the Corps' ability to solve legitimate engineering problems with a minimum of adverse environmental impact . . . the Indian Bend Project demonstrates that cities are indeed for people. And it does so in a way that bends with rather than against nature."<sup>78</sup>

In October, 1973, the Corps released two important documents related to the project. The General Design Memorandum — Phase I gave the new plan formulation for the Indian Bend Wash and identified an estimated total cost of \$18,590,000 (Table 2).<sup>79</sup>

The Final Environmental Statement also came out at this time and outlined major impacts of the greenbelt project, including:

- alteration of natural landscape
- preservation of open space
- recreational development
- preservation of some existing vegetation
- prevention of additional urban encroachment
- protection of property and life from floods
- replacement of natural desert flora with urban greenbelt
- increase of nearby land values
- relocation of several homes
- commitment of water resources to maintain the greenbelt (5.25 acre-feet per year)<sup>80</sup>

Before the end of the year, the Maricopa County Flood Control District raised its levy to 20 cents per \$100 assessed valuation. The increased revenues meant, that for the first time, the county would have the needed funds to participate with the federal government in local flood-control projects.



Table 2

<b>Indian Bend Wash Estimated Cost of Greenbelt Project U.S. Army Corps of Engineers, 1973</b>	
<b>FEDERAL COSTS</b>	
Mitigation	\$ 33,000
Channel	\$5,525,000
Recreation facilities	\$1,944,000
Engineering design	\$ 996,000
Supervision and administration	\$ 587,000
Total federal costs	\$9,135,000
<b>NONFEDERAL COSTS</b>	
Lands and damages	\$5,010,000
Relocations	\$2,630,000
Recreation facilities (Scottsdale and Tempe)	\$1,815,000
Total nonfederal costs	\$9,455,000

## CHAPTER 9

# 1974: The Course Is Clear

On April 3, 1974 the General Design Memorandum received approval from the Corps. The course for flood control in Scottsdale was clear. All that remained were acquisition of the required funds and construction.

Things really began to happen in 1974. With financial help from the Bureau of Outdoor Recreation and the Arizona State Lake Improvement Fund, Scottsdale developed the 74-acre Chaparral Park.<sup>81</sup> With help from the Bureau and HUD, progress continued on the 60-acre Vista Del Camino Park. Bridges over McDonald Drive and McDowell Road were constructed. The McDowell Road bridge, an all-weather one, ensured that the city would not be divided even if hit by a 100-year flood.

In the Arizona State Legislature, Senate Bill 1195 authorized expenditure of funds to reimburse local sponsors for costs. The city had doubled its available money by obtaining MCFCD participation and now doubled it again with state participation. Funding problems were substantially solved, at least for local participation.

In Washington, D.C., the Corps' request for funds for fiscal year 1976 had been omitted by the Office of Management and Budget. Congressman Rhodes was alerted. A Public Works Appropriation Bill passed by the House of Representatives included \$1.1 million for Indian Bend Wash. But concerned with the state of the economy, President Gerald Ford froze some Wash funds.<sup>82</sup>

## CHAPTER 10

# Honors and Civic Pride

The year 1975 brought honor and achievement, as well as difficulty, to Scottsdale. The National Society of Professional Engineers announced that the greenbelt project had been selected as one of the nation's top ten engineering achievements for 1974. Other good news came from Congressman Rhodes who sent a message saying, "OMB (The United States Office of Management and Budget) has agreed that the Indian Bend Wash will go ahead as planned."<sup>83</sup>

Construction continued and both McKellips bridge and Vista Del Camino Park were completed. In August, the City Council authorized a cost-sharing agreement with the Corps for construction of McKellips Lake.<sup>84</sup>

But funding problems persisted. Contributions from other sources, particularly the state, were not as large as expected due to nationwide economic problems and budget cutting at all levels of government. Fortunately Scottsdale still had money from the \$10 million 1973 bond election to work with.

Early in 1976, the City Council unanimously approved another cost-sharing agreement with the Corps of Engineers for work in the Wash.<sup>85</sup>

Meanwhile construction of the Thomas Road bridge, the second 100-year bridge to span the Wash, was completed.

Also in 1976, the Scottsdale City Council took time out to present Col. John Foley with a plaque of appreciation. The Colonel was honored for his support of the Indian Bend Wash project and his hard work to ensure funding.

Progress continued into 1977 with completion of the outlet and McKellips Lake recreational area. The dedication for these two projects on August 17 provided an opportunity for well-deserved civic pride. Remarks from Lt. Gen. Jack Morris, Chief of Engineers

of the the Corps of Engineers, as well as from Congressman Eldon Rudd and Congressman John J. Rhodes, highlighted the ceremonies.

Scottsdale City Council took action to expedite the remainder of the Wash project. Resolution 1595 authorized acquisition of right-of-way for the McDowell Exhibit Plaza. Two weeks later a construction contract was awarded for the facility.<sup>86</sup> The plaza offers an open-air amphitheater and exhibit areas which extend under the bridge.

Council later determined that the next structures to be built would be low-flow bridges for Indian School, Camelback and Chaparral Roads.<sup>87</sup>

Floods hit the city again in March, 1978. Extensive damage was done to the McDowell Exhibit Plaza which was still under construction. Finally, after a nine-month delay, this piece of the puzzle was put into place in December.

Also during 1978, an intermediate-flow bridge was constructed at Camelback Road. Resolution 1712 concerning acquisition of right-of-way for Hayden Road between Chaparral and Camelback Roads was passed. Resolution 1815 accepted a donation of 3.6 acres in the Wash.

Piece by piece, the puzzle was fitting together.

Workers finished construction of both the Indian School Road and Chaparral Road low-flow bridges in 1979. Other projects completed included the 100-acre Continental Golf Course, built with private funds. Completion in April of the Arizona Canal siphon eliminated a problem that had previously caused so much damage. The inlet channel was completed by the Corps. Indian School Park, with its tennis and handball courts, tot lot, park buildings, lighted multi-purpose fields and scores of other facilities, was finished by December.

The philosophy of the Indian Bend Wash was tested when City Council was faced with a proposal to convert part of the Villa Monterey golf course into an island housing development. The course had been praised years before as an example of the greenbelt at work. Now new owners wanted to circumvent the intent of the Wash project. The MCFCD response was, "To deliberately create divided flows in the main channel of a floodway is, in our opinion, contrary to good engineering judgment and practice."<sup>88</sup> In the face of strong opposition, the developers agreed to build their units along the floodway fringe.

## CHAPTER 11

# Last Piece of the Puzzle

The third decade of Scottsdale's flood control efforts was launched on January 19, 1980, with the dedication of Indian School Park, the recreational focal point for the whole greenbelt project and the last major piece of the Wash puzzle. In fact, the ceremonies served as a sort of greenbelt reunion. Many who had worked so hard on the project gathered to mark this singular achievement. Because of his long involvement and consistent efforts on behalf of the flood control project, Congressman John J. Rhodes was the logical choice for keynote speaker.

Seen from the air, Scottsdale's greenbelt is striking. A chain of parks and lakes threads through the length of the city. Due to its linear shape, about 80 percent of Scottsdale's citizens are within walking distance. Estimates are that more than one million people make use of the greenbelt annually. Environmentally, aesthetically, functionally and financially, the Wash project is an unqualified success. With the possible exception of the point about "no ants," Scottsdale's greenbelt more than fulfills the request for parks made by young Tom Warner 20 years before.

## CHAPTER 12

# How It Works

The Indian Bend Wash is about 40 percent publicly owned. The remaining 60 percent (about 736 acres) is privately held.<sup>89</sup> Over half of it was developed at no cost to the city of Scottsdale. Nearly all privately-owned open space is open to the public. For example, privately-owned golf courses developed in the Wash after 1973 are also available for use by the general public as part of development agreements.

A substantial portion of rights-of-way and channel work was donated to the city by developers who received concessions such as authorization for higher-density building, controlled encroachment into the Wash and the use of Wash land to fulfill open-space requirements. Permission to encroach into the Wash, however, requires proof that whatever is done will not raise the water level or include structures that will be damaged by subsequent flooding. The Indian Bend Wash ordinances governing encroachment meet federal flood requirements.

Most of the land donation occurred during the later stages of the Wash project development. Because of the variations in land prices over the years, a median value of \$12,000 per acre is a reasonable assumption. With approximately 200 acres privately donated, the value of the private land contribution is figured at approximately \$2,400,000 at the time of donation. A conservative estimate is that the land has increased 75 percent in value since. This brings the 1980 value of donated land to approximately \$4,200,000.<sup>90</sup>

The large numbers of people expected to use the area were kept in mind as various features were designed. For instance, structures are "kidproof"; paths and trails run under bridges and are an integral part of the channel flow design.

The golf courses and parks vary in width from 600 feet to 1,100 feet and are graded 6 feet to 18 feet lower than the resorts, homes and businesses that surround them. By the use of well planted and

### *How It Works*

well maintained grassy areas, the land is protected from the severe erosion that naturally results from wash flooding. Anything that can be damaged or pose an obstruction to floodwaters stands on pads that can be easily hosed down or is constructed to the side of the 100-year flood line.

During heavy flooding, low-flow roads are closed, but this is a minor inconvenience. No longer is part of the city separated from emergency services at times when they are most needed. And it was done without scarring the city with a seven-and-a-half-mile-long concrete ditch.

Scottsdale has made the greenbelt an integral part of its outdoor lifestyle. It would be hard to put a price tag on the aesthetic value of the greenbelt and what it adds to the lives of those who live around it or just visit. But its beauty has attracted high-ticket homes, condominiums and apartments, as well as businesses that thrive on the traffic generated around and through the area. Real estate values have increased enormously in the area. This is partly due to inflation, but primarily to appreciation caused by the greenbelt and its associated amenities.<sup>91</sup> As a result, the Wash has added to the tax base significantly rather than continuing as a liability.

On many points the Indian Bend Wash project serves as a model. It is most obviously a model for the design of future water projects. But it also underscores what a concerned public and a farsighted, responsive city government can accomplish. It is a model of diplomacy and compromise as well. An "alphabet soup" of government agencies and a sprinkling of private interests had to agree to support an innovative engineering approach that previously had been demonstrated only on a small scale. Once convinced, the cooperation and delicate coordination of the various government and private entities had to be accomplished. The results are certainly worth the effort.

In 1891 Winfield Scott took the opportunity presented by a disastrous flood to turn "adversity into advantage" by encouraging immigration to his adopted home because of its available water. His spiritual heirs in his namesake city have followed his example by turning the adversity of floodwaters into the advantage of enhanced lifestyle.

Scottsdale has come a long way since the beginnings of the Indian Bend Wash project. It is no longer just a wide spot in the road. Marketing research indicates that the 100,000 people now living here rank high on the national scale in education, income and cultural

pursuits. During the next 15 years, the city's population is expected to grow by 50,000. Substantial numbers of these will live here only part of the year, enjoying the lifestyle and the climate while maintaining another home elsewhere. Long-range projections forecast the 1980s as Scottsdale's greatest period of growth.

It has been said that the citizen's role in the Indian Bend Wash project came mainly during its early days. But though professional engineers figured out the calculations and government employees hammered out funding and other intricate agreements, Scottsdale's citizens never lost touch with their leaders and they never relinquished support of the greenbelt. Scottsdale has been and will continue to be a city where citizens are important and their ideas and concerns listened to and responded to.



Table 3

**Indian Bend Wash Project**  
**Estimated Costs, 1984**

	FLOOD CONTROL	RECREATION	Misc.	Total
Federal Grant for Urban Renewal			\$ 374,740	\$ 374,740
U.S. Army Corps of Engineers	\$23,300,000	\$ 6,100,000*		\$29,400,000
City of Tempe		\$ 100,000		\$ 100,000
State of Arizona	\$ 3,500,000	\$ 900,000	\$ 7,600	\$ 4,407,600
Maricopa County Flood Control District	\$ 6,065,000			\$ 6,065,000
City of Scottsdale	\$ 5,700,000	\$ 7,480,000	\$ 900,000	\$14,080,000
Totals	\$38,565,000	\$14,580,000	\$1,282,340	\$54,317,230

The above costs are estimates as of June 1, 1984.

Costs for all projects were not complete by date of this publication.

\* 50% cost sharing with cities of Tempe and Scottsdale. 50-year repayment schedule.

## **APPENDIX 1**

### **Indian Bend Wash Project Information**

<b>PROJECT LOCATION</b>	Scottsdale, Maricopa County, Arizona
<b>AUTHORIZED</b>	Flood Control Act 1965: 7.5 miles. Concrete channel.
<b>DRAINAGE BASIN</b>	200 square miles.
<b>LENGTH OF WASH</b>	31 miles.
<b>PROJECT REACH</b>	Lower 7.5 miles.
<b>REFORMULATED</b>	October 1973, structural, non-structural, plus recreation.
<b>PURPOSE</b>	Local protection, flood control and recreation.
<b>PROJECT DESIGN FLOOD</b>	30,000 cfs, 100-year.
<b>FLOOD OF RECORD</b>	20,000 cfs, 70-year (June, 1972).

### **Flood Problem**

Under pre-project conditions, high-intensity desert storms caused flash floods. Existing streambed was inadequate to contain flood flows. In addition, the raised banks of the Arizona Canal intercepted flood flows. Flows eventually entered canal, overtopped and breached downhill levees sending sudden flood flows into Scottsdale. The Paradise Valley Detention Dikes (CAP), constructed by the Bureau of Reclamation, 7 miles upstream from the inlet channel provide partial protection from flooding (Standard Project Flood reduced from 62,000 cfs to 39,000 cfs pre-project conditions).

## Project Features

1. Flood Control
  - a. Inlet
    - Trap section
    - Length: one mile
    - Width: 500' to 1,000'
    - Depth: 7' to 10'
    - Velocity: 5 to 10 fps
    - Stone revetted banks ( $Z = 2.5$ ) covered with landscape fill ( $Z = 4$ ). 10' grouted stone drop structure downstream side of Indian Bend Road.
  - b. Greenbelt Floodway
    - Length: 4.5 miles
    - Width: 800' to 1,200'
    - Depth: 5' to 8'
    - Velocity: 5 to 8 fps
  - c. Outlet
    - Trap section
    - Length: two miles
    - Width: 350' to 600'
    - Depth: 5' to 10'
    - Velocity: 5 to 10 fps
    - Stone revetted banks ( $Z = 2.5$ ) covered with landscape fill ( $Z = 4$ )

### Arizona Canal Features

1. Siphon  
Three-compartment, 10' x 11', concrete box; 900' long  
Open concrete inlet structure; 450' long  
Open concrete outlet structure; 400' long  
Design Q (irrigation flows) = 2,000 cfs
2. Wasteway  
Concrete channel, 500' long, 60' wide, 8' deep to release canal flows into Indian Bend Wash (2,500 cfs design Q)
3. Interceptor Channel  
Open, unlined trap channel; Z=6  
1.3 miles long; 300' wide; 7' to 10' deep  
5 fps — 5,500 fps  
1,200-foot spillway along north bank of Arizona Canal, west of Pima Road, discharges excess flood flows in canal (above 2,000 cfs) into interceptor channel.
4. Collector Channel  
Open, covered channel, conduits  
3 miles long, 5' to 100' wide  
50 cfs to 900 cfs  
System collects flood flows ponded along west bank of Arizona Canal
5. Side Channels  
Covered conduits along McDonald Drive, Chaparral Road and Camelback Road convey flood flows from collector channel under Arizona Canal to Indian Bend Wash. Collector side channel system reduces ponding west of canal and ensures that east bank of canal will not be overtopped by 100-year flood from drainage areas west of canal.

## APPENDIX 2

### Indian Bend Wash Estimated Maintenance Costs Of Public Recreation Areas

AREA	TOTAL SIZE	PERSONNEL	CONTRACTUAL	COMMODITIES	ACRES TURF	TOTAL COST
McKellips/Vista Del Camino	70 acres	\$69,824	\$26,403	\$ 8,527	40.7	\$104,759
Eldorado/McDowell Plaza	63 acres	64,641	41,111	10,065	44.8	115,817
Indian School	60 acres	60,914	29,872	12,305	30.0	103,091
Chaparral	74 acres	60,380	42,830	13,050	47.0	116,260

## **APPENDIX 3**

### **The Indian Bend Wash Ordinances**

The city of Scottsdale had little legal authority to regulate development in the Indian Bend Wash floodplain until passage of the 1967 Charter Amendments. When voters approved these amendments to the City Charter, Scottsdale was given the power to identify floodplains and control growth in them.

On February 6, 1968, Scottsdale passed the first ordinance regulating development in the Wash. The ordinance basically follows Resolution 348 which instructed city officials to deny construction permits for areas between the limits of 40,000-cubic-feet-per-second flow as identified by the U. S. Corps of Engineers. Exceptions could be made. Under the new ordinance, property owners had the burden of proof of their compliance. A fine and/or jail sentence could be imposed on violators.

In April, 1974, the City Council adopted Ordinance 795 which brought the city into compliance with new state laws regarding the rights and responsibilities of municipalities in floodplain management. The ordinance restricted construction in the 50-year floodplain and provided procedures for removal of obstructions.

When newer federal insurance regulations were issued, the ordinances did not comply. To remedy this, Ordinance 853 was passed on November 19, 1974. This ordinance repealed Ordinance 795 and established new regulations which included restriction of construction in the 100-year floodplain.

Ordinances 879 and 907, passed in 1975, amended Ordinance 853.

On July 20, 1976, the City Council adopted Ordinance 957. This ordinance repealed previous ordinances and consolidated city policy into one document. Details about finished-floor elevations and parking in the floodplain were added.

Ordinance 957 was later repealed by Ordinance 1015 on March 1, 1977. This ordinance differed little from the one it repealed.

In 1978 Ordinance 1121 and Ordinance 1131 were passed. The first

### *Appendix 3*

permitted certain wet-street crossings. The second gave special considerations for hillside districts.

The current Indian Bend Ordinance, 1015 as amended by 1121 and 1131, is more refined, technical and encompassing than the original ordinance passed in 1968. Compliance with state and federal regulations necessitated many of the changes. The purpose, however, remains the same: to allow orderly development in the floodplain area that will be free from the threat of flooding and will improve the flood channel for the benefit of all.

## **APPENDIX 4**

### **A Chronology Of Scottsdale**

- 1877** Desert Land Act enacted.
- 1881** Phoenix incorporates as city.
- 1883** Arizona Canal built through Scottsdale area.
- 1889** Winfield Scott starts farm at present north-east intersection of Scottsdale and Indian School Roads.
- 1891** Extensive flooding.
- 1895** Town sites go on sale.
- 1896** First time name Scottsdale used officially.
- 1897** First post office open.
- 1934** Population estimate: 300.
- 1939** Severe flooding of Indian Bend Wash.
- 1940** Population estimate: 743.
- 1943** Indian Bend Wash floods.
- 1948**
- Feb.* Rural Fire Department started.
- May* *Scottsdale Daily Progress* first published.
- 1950** Population by U.S. census: 2,032.  
Land area: .62 square miles.
- 1951**
- June* Town of Scottsdale incorporates.
- July* First town council appointed. Members: Mort Kimsey, Jack Sweeney, Bill Miller, E.G. Scott. Malcolm White selected mayor.
- 1951**
- Oct.* Scottsdale signs first contract with Rural Fire Department to provide private fire protection for city.
- 1958** Population estimate: 8,000.
- June* Mort Kimsey elected mayor.
- Aug.* "Old Town" businessmen agree to maintain western architecture.
- Nov.* Town manager system adopted by Scottsdale.



#### *Appendix 4*

- Dec.* Gordon Allison becomes first town manager.
- 1959** Arizona State Legislature authorizes county boards of supervisors to establish special flood control districts.
- Aug.* Flood Control District of Maricopa County (FCDMC or MCFCD) created.
- Dec.* Public meeting held by Corps to present plan for channelization of Indian Bend Wash.
- 1960** Population by U.S. census: 10,026.  
Land area: 3.8 square miles.
- Mar.* Governor signs charter making Scottsdale a mayor-council-manager government.
- 1961**
- Jan.* Robert J. McNutt named new town manager.
- Feb.* U.S. Corps of Engineers authorizes interim study of Indian Bend Wash.
- Aug.* Corps presents two alternatives for solving Wash flooding problems.
- Oct.* City Charter signed; town becomes city.
- Dec.* Corps offers best plan for Wash: concrete lined channel.
- 1962**
- Jan.* Scottsdale City Council approves Corps' channel plan.
- Jan.-*
- Feb.* Corps holds public hearing on channel plan.
- Apr.* William P. Schrader elected mayor.  
Corps releases interim report.
- July* Ken Williams named city manager.
- Dec.* Scottsdale City Council passes Resolution 235 endorsing construction of flood-control channel through Wash.
- 1963**
- Jan.* Representatives of the Corps and Maricopa County Department of Parks and Recreation, the MCFCD and Scottsdale meet to explore incorporating park facilities in proposed improvements.
- Nov.* Scottsdale City Council passes Resolution 300 endorsing the comprehensive county flood-control program.  
MCFCD holds hearing on comprehensive plan.
- 1964**
- Jan.* Ordinance 181 passed, prohibiting subdividing land in Indian Bend Wash.
- Feb.* Eisner-Stewart and Associates retained to assist in preparing master plan.

- William Walton asked to head Indian Bend Wash committee.
- Apr.* John Woudenberg becomes mayor.
- May* Richard Malcolm named city manager.
- Aug.* Committee headed by Walton recommends use of Indian Bend Wash as greenbelt.
- Oct.* Scottsdale City Council approves Resolution 348 regulating development in the Wash.  
Council member C.W. "Bill" Clayton named interim mayor.  
City Council votes to prohibit construction in Indian Bend Wash within 100-year flood level.
- Nov.* First STEP Forum held.
- 1965** Population by U.S. census: 54,504  
Land area: 63.3 square miles.  
Total city park acreage: 0.
- Jan.* STEP panels ask for civic center, parks, airport and underground utilities.
- Apr.* William Donaldson becomes town manager.
- Sept.* Scottsdale voters approve \$1,438,000 in bond election, including funds for park acquisition.
- Oct.* Flood Control Act of 1965 (Public Law 89-298) enacted.
- Nov.* Council passes ordinance requiring underground utility lines
- 1966** STEP Forum: organized by school areas to implement recommendations and studies of the previous STEP Committees.
- Jan.* Council member Dr. Bud L. Tims becomes mayor.
- Mar.* \$22 million flood-control bond issue rejected.
- Aug.* Ground breaking for Eldorado Park.
- Sept.* Disastrous flood hits Scottsdale.
- Dec.* First city master plan submitted by Eisner-Stewart and Associates.
- 1967** STEP Forum: meetings held concerning General Plan and the seven areas of the original STEP Committee.
- Mar.* "Unique Design" ordinance for service station architecture is passed by council.
- June* McCormick Ranch annexed.  
Scottsdale Airport opened.
- July* Eisner master plan adopted by council.
- Nov.* Scottsdale voters approve Charter Amendments.

- Dec.* Erickson Plan released.  
Indian Bend Wash floods.
- 1968** Nation's first urban campground completed in Eldorado Park.  
STEP Forum: a continuation of 1967 approach.
- Feb.* Erickson Report, urging greenbelt for Indian Bend Wash, presented to City Council.
- Nov.* Corps begins study of Erickson plan.
- 1969** Applications made to and granted by the U.S. Department of Housing and Urban Development and the U.S. Department of Labor for urban renewal projects.  
Scottsdale pioneers one-person mechanized garbage collection and starts revolution in the industry.  
STEP Forum: areas of concern — community affairs, community development, services, transportation and economic development.
- 1970** Population by U.S. census: 67,823; the third largest in the state.  
Corps finds Erickson Plan feasible.
- Sept.* Scottsdale Community College opens.
- Dec.* Scottsdale sales tax measure to provide flood control funds defeated.
- 1971** Scottsdale purchases 8.3 acres in Vista Del Camino wash area.  
Brookings Institute Seminars: STEP Committees evolve into one-day seminars.
- Jan.* Public hearing on flood-control implementation.
- Apr.* Dale Carter becomes city manager.
- June* Planned Community Development established.
- 1972** Total damage from the year's three floods: \$3.5 million.  
Brookings Institution Seminars: STEP Committees.
- Apr.* City annexes 3,500 acres including 620-acre Taliesin West.  
Total land acreage: 70 square miles.
- June* Severe Indian Bend Wash flooding.
- 1973** STEP Forum.
- Apr.* Flood bond issue and charter revisions passed.
- July* Intergovernmental agreement signed providing \$600,000 from the MCFCD for acquisition of land and Wash improvements.
- Aug.* Scottsdale authorizes contract with MCFCD for joint development of the Wash.

- 1974** Population estimate: 85,000.  
Total city park acreage: 358.  
Three STEP Forums.  
Bridges over McDonald Drive and McDowell Road constructed.  
State Senate Bill 1195 authorizes expenditure of funds to reimburse local sponsors for costs.
- July* William C. Jenkins becomes mayor.
- 1975** Indian Bend Wash project selected by the National Society of Professional Engineers as one of the top ten engineering achievements in the U.S. for 1974.  
STEP Forum: Dialogue on Aging.  
Completion of McKellips bridge and Vista Del Camino Park.
- July* Frank Aleshire becomes city manager.
- 1976** Completion of Thomas Road bridge.  
STEP Forum on the young adult.
- 1977** Completion of outlet and McKellips Lake recreational area.  
STEP Forum: Brookings Plus Five.
- Mar.* Flooding in the Wash damages McDowell Exhibit Plaza.
- 1978** STEP Forum on library services.  
STEP Forum on economic development.
- 1979** Completion of low-flow bridges at Indian School and Chaparral Roads.  
Completion of privately-built Continental Golf Course.
- Apr.* Completion of the Arizona Canal siphon.  
Completion of inlet channel by the Corps.
- Dec.* Completion of Indian School Park.
- 1980** Dedication of Indian School Park.
- Mar.* Roy Pederson becomes city manager.
- Apr.* Herbert R. Drinkwater becomes mayor.
- 1984** City Council ensures future water for Scottsdale through purchase of Planet Ranch on the Bill Williams River near the California border. Ownership of the ranch provides surface water rights of 15,000 acre-feet annually.

## **APPENDIX 5**

### **A Chronology of STEP Forums**

1964 STEP (Designed to  
Provide a Three-year  
Program for Capital  
Improvements)

- Libraries, Museums & Galleries Task Group
- Airport
- Public Works
- Public Utilities
- Public Safety
- Parks, Recreation & City Beautification
- Civic Center

1966 STEP Forum

This committee was organized by school areas. STEP '66 was to implement the recommendations and studies of the previous STEP committees through a person-to-person communication program with the people in order to gain support for the previous STEP committees' goals.

- Charter Review
- Water Supply
- Trash Pickup
- Revenue Bond for Roads
- Community Plan
- Park Development
- The Need for a City Hall
- Library Remodeling
- Legislative Needs
- Feedback of Opinion from Various Areas

*Appendix 5*

1967 STEP Forum	Meetings were held concerning the General Plan as well as an update of the seven areas of the original STEP Committee.
1968 STEP Forum	A continuation along the same lines as the 1967 STEP Committee with groups still divided according to neighborhood school areas.
1969 STEP Forum	<ul style="list-style-type: none"><li>• Community Affairs</li><li>• Community Development</li><li>• Community Improvements</li><li>• Community Services</li><li>• Community Transportation</li><li>• Economic Development</li></ul>
1971-72 Brookings Institution Seminars	<p>At this point, the neighborhood STEP Committees that were previously formed according to school areas evolved into one-day seminars held in the Atrium of the Center for the Arts.</p> <ul style="list-style-type: none"><li>• Population Growth and Land Use</li><li>• Economy and Human Resources</li><li>• The Environment</li><li>• Community Design</li><li>• Housing</li><li>• Transportation, Streets and Highways</li><li>• Education</li><li>• Health</li><li>• Public Safety</li><li>• Recreation, Cultural and Entertainment Activities</li><li>• City Government</li><li>• City Finances</li></ul>

1973 STEP Forum	<ul style="list-style-type: none"><li>• Sign Amortization</li><li>• Requiring of Dedications for Parks and Schools</li><li>• Requiring of Dedications for Public Utility Easements</li><li>• Requiring of Dedications for Public Facilities</li></ul>
1974 STEP Forum	<ul style="list-style-type: none"><li>• Council of Governments</li><li>• Transportation Planning</li><li>• Managing the Urban Environment</li><li>• Tax Limitations and Redistribution</li><li>• Open Meetings</li><li>• Court Reform</li></ul>
1974 STEP Forum	<p>This was the second STEP Forum held in 1974 and addressed the same topics as the previous meeting above.</p>
1974 STEP Forum	<ul style="list-style-type: none"><li>• Discouraging Through Traffic</li><li>• Alternative Modes of Transportation</li><li>• Land Use Planning</li></ul>
1975 STEP Forum (Dialogue on Aging)	<ul style="list-style-type: none"><li>• City Services</li><li>• Human Resources Services</li><li>• Churches</li><li>• Nursing Homes and Independent Living</li><li>• Civic Organizations</li></ul>

## *Appendix 5*

### 1976 STEP Forum on the Young Adult

- Role of the Young Adult
- Demographic Trends
- Social Activities
- Recreation
- Life Style
- Housing
- School Enrollment
- Industry

### 1977 STEP Forum Brookings Plus Five

Discussion of recommendations  
made at 1972 Brookings Seminars.

### 1978 STEP Forum on Library Services

Discussion on implications of  
Library Community Analysis  
Report.

### 1978 STEP Forum on Economic Development

- Transportation
- Jobs
- Housing
- Finance
- Environment, Energy and Water

### 1981 STEP Forum “Scottsdale 2000: Directions for Tomorrow”

This program included 200 resident-  
volunteers who served for one year  
in one of 12 subcommittees.  
Discussions were directed toward  
Scottsdale in the year  
2000—building for the future.

- Housing
- Public Safety
- Resource Conservation
- Economic Development
- City Buildings
- Transportation
- Neighborhood Revitalization
- Long-Range Financing
- Issues of the Elderly
- Parks and Open Space Needs
- Issues of Youth
- Cultural Affairs



## APPENDIX 6

### Scottsdale City Government: Terms Of Office

NAME	OFFICE	TERM
Malcolm White	M	July 1951- June 1958
Mort Kimsey	CC	July 1951- June 1958
	M	June 1958- Apr. 1962
Bill Miller	CC	July 1951
Jack Sweeney	CC	July 1951- July 1953
E.G. Scott	CC	July 1951- Apr. 1961
George Cavalliere	CC	July 1951- July 1959
John Shoeman	CC	Mar. 1952- June 1958
V.D. Frederick	CC	Mar. 1952- July 1954
Glenn Peterson	CC	July 1953- Oct. 1953
Shirley Brown	CC	Oct. 1953- Mar. 1954
Joe Willmoth	CC	Mar. 1954- Feb. 1958
Lute Wasbotten	CC	Dec. 1954- June 1958
Edwin O. Brown	CC	Feb. 1958- June 1958
Raymond Guy	CC	June 1958- Feb. 1960
Mildred Bratzel	CC	June 1958- Feb. 1960
William Schrader	CC	June 1958- Apr. 1962
	M	Apr. 1962- Apr. 1964
George Stroup	CC	June 1958- Sept. 1959
Jim Matthews	CC	Nov. 1958- Dec. 1959
John Marron	CC	July 1959- Apr. 1962
John Pickrell	CC	Sept. 1959- Apr. 1961
Austin Smith	CC	Jan. 1960- Sept. 1960
Moya Kelly Easterling	CC	Feb. 1960- Apr. 1961
John Knudsen	CC	May 1960- Apr. 1962
Robert Hutchins	CC	Oct. 1960- Apr. 1961
C.W. Clayton	CC	Apr. 1961- Oct. 1964
	M	Oct. 1964- Dec. 1965
William Flanigan	CC	Apr. 1961- Apr. 1962

# *Appendix 6*

Herb Caywood	CC	Apr. 1962- Apr. 1966
Thomas Hunter	CC	Apr. 1962- Apr. 1964
Trent Meacham	CC	Apr. 1962- June 1963
Boyd Parker	CC	Apr. 1962- Apr. 1964
John Woudenberg	CC	Apr. 1962- Apr. 1964
	M	Apr. 1964- Sept. 1964
Tom Felke	CC	June 1963- Sept. 1963
Dr. Henry Reuss	CC	Sept. 1963- Apr. 1964
Leonard Johnson	CC	Apr. 1964- Apr. 1970
John Meier	CC	Apr. 1964- Apr. 1970
John Senini, Jr.	CC	Apr. 1964- Apr. 1970
Dr. Bud L. Tims	CC	Apr. 1964- Jan. 1966
	M	Jan. 1966- July 1974
Richard Auxier	CC	Oct. 1964- Apr. 1966
Ken Murray	CC	Jan. 1966- Oct. 1971
Robert L. Jones	CC	Apr. 1966- July 1970
William C. Jenkins	CC	Apr. 1966- July 1974
	M	July 1974- Apr. 1980
Doris McCauley	CC	Apr. 1966- Sept. 1968
Heinz Hink, Ph.D.	CC	Sept. 1968- Apr. 1982
Richard Campana	CC	July 1970- Apr. 1980
Paul Messinger	CC	Nov. 1971- Apr. 1976
Billie Axline Gentry	CC	Apr. 1970-
Herbert R. Drinkwater	CC	Apr. 1970- Apr. 1978
	M	Apr. 1980-
Charlie Smith	CC	July 1974- Apr. 1984
Jeff Schubert	CC	Apr. 1976- Apr. 1984
Diane D. Cusack	CC	Apr. 1978-
James D. Bruner	CC	Apr. 1980-
Jean L. Black	CC	Apr. 1982-
William Walton	CC	Apr. 1984-
René Wendell	CC	Apr. 1984-

M - Mayor

CC - City Council Member

## **APPENDIX 7**

### **Major Awards and Recognition**

Recognized as One of the Ten Outstanding Engineering  
Achievements in the United States in 1974  
National Society of Professional Engineers

Certificate of Appreciation 1977  
For Patriotic Civilian Service  
Department of the Army

Special Recognition 1979  
McDowell Exhibit Plaza  
Chief of Engineers Design and Environmental Awards Program  
U.S. Army Corps of Engineers

Environmental Award of Merit 1979  
McDowell Exhibit Plaza  
Chief of Engineers Design and Environmental Awards Program  
U.S. Army Corps of Engineers

Engineering Award of Merit 1980  
Indian School Park  
Chief of Engineers Design and Environmental Awards Program  
U.S. Army Corps of Engineers

Honorable Mention 1980  
Indian School Park  
Chief of Engineers Design and Environmental Awards Program  
U.S. Army Corps of Engineers

Environmental Excellence Grand Award  
For Outstanding Environmental Achievement  
Valley Forward Association—1981

Presented, by invitation, to  
The Eleventh Congress  
International Commission on Irrigation and Drainage  
Grenoble, France—1981

Excellence in Floodplain Management  
Presented by Association of State Floodplain Managers  
3rd Annual Conference, April 1981

Federal Design Achievement Award  
Indian Bend Wash—Excellence in Federal Design, October, 1984  
National Endowment for the Arts

## FOOTNOTES

1. U.S. Army Corps of Engineers, Los Angeles District, *Indian Bend Wash, Recreation Master Plan, Design Memorandum #2*, Maricopa County, Arizona, March, 1975, pp. 8-9.
2. Richard E. Lynch, *Winfield Scott*, a biography of Scottsdale's founder. (The City of Scottsdale, Arizona), 1978, p. 100.
3. *Ibid*, p. 113.
4. *Ibid*, p. 120.
5. Arizona, State of, *Revised Statutes, Title 45, Chapter 10, Article 5, Sections 45-2351 to 45-2371* inclusive.
6. *Record Book #1, Flood Control District, Maricopa County, Arizona*, August 3, 1959.
7. U.S. Army Corps of Engineers, Los Angeles District, *Interim Report*, April 15, 1962, p. 20.
8. *Ibid*, p. 20.
9. *Ibid*, p. 20.
10. *Ibid*, p. 21.
11. *Interim Report*, p. 3.
12. Kathy Worth, "Millionaire Apartments Granted City Approval," *Scottsdale Daily Progress*, (February 21, 1961).
13. Scottsdale City Council Minutes, August 8, 1961, p. 2.
14. Letter from John C. Lowry, Acting Chief Engineer and General Manager, Maricopa County Flood Control District, to H.W. Thompson, District Engineer, U.S. Army Corps of Engineers, October 5, 1961.
15. Letter from H.W. Thompson to John C. Lowry, October 17, 1961.
16. Press Release, Los Angeles District Engineer, U.S. Army Corps of Engineers, December 19, 1961.
17. Scottsdale City Council Minutes, January 23, 1962, p. 2.
18. Press Release, U.S. Army Corps of Engineers, December 19, 1961.
19. Scottsdale City Council Minutes, January 23, 1962, p. 2.
20. *Record Book #1*, Public Hearing, February 5, 1962.

21. *Ibid.*
22. *Interim Report*, p. 32.
23. *Ibid*, p. 1.
24. *Ibid*, p. 25.
25. *Ibid*, p. 29.
26. Scottsdale City Council Minutes, November 20, 1962, p. 5.
27. Scottsdale City Council *Resolution 235*, adopted December 27, 1962.
28. Scacewater, L.B., Interviewed by Marjorie MacLean, April 3, 1980, Phoenix, Arizona.
29. Letter from District Engineer (Los Angeles) to Division Engineer (San Francisco), August 4, 1964.
30. Letter from Tom Warner to Editor, *Scottsdale Daily Progress*, (November 13, 1963).
31. "City Council Meets-Discusses Park Plan," *The Arizonian*, (November 21, 1963).
32. Scottsdale City Council Minutes, November 19, 1963.
33. *Record Book #1*, Public Hearing, November 20, 1963.
34. "Plan Consultant Retained by City," *The Arizonian* (February 20, 1964).
35. Indian Bend Wash Committee Report on IBW Flood Control Project, July 21, 1964, pp. 2-3.
36. *Ibid*, p. 3.
37. *Ibid*, p. 3.
38. *Ibid*, p. 4.
39. *Ibid*, p. 5.
40. Scottsdale City Council Minutes, August 4, 1964.
41. "Wash Plan Snarled," *Scottsdale Daily Progress*, (August 20, 1964).
42. Scottsdale City Council Minutes, September 1, 1964.
43. "City Still Pushing IBW as Parks Project," *The Arizonian*, (August 28, 1964).
44. Scottsdale Parks and Recreation Meeting, September 22, 1964.
45. Scottsdale Parks and Recreation Meeting, October 28, 1964.
46. *Municipal Capital Improvements 1966-1968*, prepared by Scottsdale Town Enrichment Program (STEP), March 15, 1965.
47. Minutes of STEP Parks and Recreation Task Group, December 2, 1964.
48. *Ibid*, p. 4.

49. "Indian Bend Park," *Scottsdale Daily Progress*, (December 14, 1964).
50. Scottsdale Parks and Recreation Meeting, January 27, 1965.
51. Scottsdale Parks and Recreation Committee Meeting, March 10, 1965.
52. Scottsdale Parks and Recreation Meeting, July 14, 1965.
53. Scottsdale City Council Minutes, October 5, 1965.
54. "Flood Control and Parks," *Scottsdale Daily Progress*, (February 18, 1966).
55. John Erickson, "Outline of Points for Consideration," January 22, 1966.
56. *Neighborhood Redevelopment: The Scottsdale Story*, prepared by Martha Almon Rozelle, (The City of Scottsdale), March, 1978, p. 3.
57. Eisner-Stewart 1966 Proposed General Plan.
58. Letter from William Donaldson to Congressman John J. Rhodes, September 27, 1967, p. 2.
59. City of Scottsdale Ordinance 350.
60. "Wash Project Would Up Valuation," *Scottsdale Daily Progress*, (November 11, 1967).
61. Letter from Division Engineer to Chief of Engineers, U.S. Army Engineer District, Los Angeles, Corps of Engineers, November 22, 1967.
62. Scottsdale Parks and Recreation Meeting, July 10, 1968.
63. Letter from William Donaldson to Mrs. Alma Alkire, Administrative Assistant to Congressman John J. Rhodes, October 29, 1969.
64. *Neighborhood Redevelopment: The Scottsdale Story*, p. 4.
65. Memorandum from John Erickson to William Donaldson, March 5, 1970.
66. *Ibid.*
67. Memorandum from Mayor Bud L. Tims to Scottsdale City Council, January 29, 1971.
68. *Record Book #1*, Flood Control District of Maricopa County, Meeting, June 1, 1971.
69. Scottsdale City Council Minutes, May 18, 1971.
70. *General Design Memorandum, Phase I*, U.S. Army Corps of Engineers, October 23, 1973, p. 22.
71. *Neighborhood Redevelopment: The Scottsdale Story*, pp. 13-14.

72. Scottsdale City Council Minutes, November 21, 1972.
73. Scottsdale City Council Minutes, December 19, 1972.
74. Scottsdale City Council Minutes, June 19, 1973.
75. Transcript from Public Hearing, September 12, 1973, Scottsdale, Arizona.
76. *Ibid*, p. 6.
77. *Ibid*, pp. 22, 26.
78. *Ibid*, pp. 41-42.
79. *General Design Memorandum, Phase I*, p. 38.
80. *Final Environmental Statement*, U.S. Army Corps of Engineers, Los Angeles District, October, 1973, p. 21.
81. Scottsdale City Council Minutes, March 5, 1974, p. 4.
82. "Wash Plan," *Scottsdale Daily Progress*, (November 26, 1974).
83. Telecon from Office of Congressman John J. Rhodes to Mayor William Jenkins, September 23, 1975, 2:29 p.m.
84. Scottsdale City Council Minutes, August 12, 1975.
85. Scottsdale City Council Minutes, February 3, 1976.
86. Scottsdale City Council Minutes, April 26, 1977.
87. Scottsdale City Council Minutes, July 12, 1977.
88. Letter from Nicholas Karan, Professional Engineer, Maricopa County Flood Control District to Len Erie, City of Scottsdale, September 11, 1979.
89. Memorandum from Bruce Olson, Jr., Real Estate Services Officer to Woody Maggard, Jr., Director, Economic Development, City of Scottsdale, October 15, 1980.
90. *Ibid*.
91. *Ibid*.



## BIBLIOGRAPHY

- Artz, Leonard. "Engineering Achievements in Energy, Aerospace, Water, Bioengineering Honored by NSPE," *Professional Engineer*, Vol. 45, No. 5. May, 1975, pp. 46-49.
- Arizona State Flood Control Program*. Arizona Water Commission. March, 1973.
- Arizona, State of, *Revised Statutes, Title 45, Chapter 10, Article 5, Sections 45-2351 to 45-2371 inclusive*.
- Bray, Tim. Personal Interview. Scottsdale, Arizona. May 12, 1980.
- Byrne, Michael G. and James Y. Ueda. "On a Rampage Through a Suburb." From *Water and Landscape a Landscape Architecture Book*, ed. Grady Clay, New York: McGraw-Hill Book Co., 1979.
- Landscape Architecture Magazine*. 1979, pp. 104-110.
- "City Council Meets-Discusses Park Plan." *The Arizona*, November 21, 1963.
- City of Scottsdale, Council Meeting, August 8, 1961.
- City of Scottsdale, Council Meeting, January 23, 1962.
- City of Scottsdale, Council Meeting, November 20, 1962.
- City of Scottsdale, Council Meeting, November 19, 1963.
- City of Scottsdale, Council Meeting, August 4, 1964.
- City of Scottsdale, Council Meeting, September 1, 1964.
- City of Scottsdale, Council Meeting, October 5, 1965.
- City of Scottsdale, Council Meeting, May 18, 1971.
- City of Scottsdale, Council Meeting, November 21, 1972.
- City of Scottsdale, Council Meeting, December 19, 1972.
- City of Scottsdale, Council Meeting, June 19, 1973.
- City of Scottsdale, Council Meeting, March 5, 1974.
- City of Scottsdale, Council Meeting, August 12, 1975.
- City of Scottsdale, Council Meeting, February 3, 1976.
- City of Scottsdale, Council Meeting, June 12, 1977.
- City of Scottsdale, Council Meeting, August 12, 1975.
- City of Scottsdale. Parks and Recreation Meeting. July 8, 1964.

City of Scottsdale. Parks and Recreation Meeting. September 22, 1964.

City of Scottsdale. Parks and Recreation Meeting. October 28, 1964.

City of Scottsdale. Parks and Recreation Meeting. January 27, 1965.

City of Scottsdale. Parks and Recreation Meeting. March 10, 1965.

City of Scottsdale. Parks and Recreation Meeting. July 14, 1965.

City of Scottsdale. Parks and Recreation Meeting. April 10, 1968.

City of Scottsdale. Parks and Recreation Meeting. July 10, 1968.

City of Scottsdale. *Flood Control Status Report*. Arizona. January, 1977, with appendixes.

City of Scottsdale. Public Hearing on Indian Bend Wash Flood Control, Record Book #1, Flood Control District, Office of the County Clerk. January 29 and February 5, 1962.

City of Scottsdale. Public Hearing on Comprehensive Flood Control Program for Maricopa County, Record Book #1, Office of the County Clerk. November 20, 1963.

"City Still Pushing IBW as Parks Plan." *The Arizonian*, August 28, 1964.

*Committee Report on Indian Bend Wash Flood Control Project*. William Walton, Chairman, July 21, 1964.

*Comprehensive Flood Control Program Report*. Prepared by the Flood Control District of Maricopa County. 1963.

"Croquet, Boccie, Racquetball, and More — all at new Scottsdale Park," *Sunset Magazine*, May, 1980, pp. 9-10.

Cusack, Diane. Interviewed by Marjorie MacLean. Scottsdale, Arizona. March 27, 1980.

District Engineer. U.S. Army Corps of Engineers (Los Angeles), Letter to Division Engineer (San Francisco). August 4, 1964.

Division Engineer. Letter to Chief of Engineers. November 22, 1967.

Donaldson, William. Letter to Mrs. Alma Alkire, Administrative Assistant to Congressman John J. Rhodes. October 29, 1969.

\_\_\_\_\_. Letter to Congressman John J. Rhodes. September 27, 1967.

Economic Development Program. *Scottsdale Indian Bend Wash Greenbelt Acreage Report*. March, 1977.

Eisner-Stewart and Associates. *Proposed Comprehensive General Plan*. Scottsdale, Arizona, Vol. 3, December, 1966.

Erickson, John. Interviewed by Marjorie MacLean. Scottsdale Arizona. April 23, 1980.

Erickson, John. Memorandum to William Donaldson. March 5, 1970.

\_\_\_\_\_. "Outline of Points for Consideration." January 22, 1966.

Erie, Len. Interviewed by Marjorie MacLean. Phoenix, Arizona. April 9, 1980.

Erie, Len and Asle M. "A Case Study of Recreation, Flood Control and Land Use in Indian Bend Wash, Scottsdale, Arizona." Prepared for the International Congress on Irrigation, Drainage and Flood Control. Grenoble, France. September, 1981.

Filler, Dick. Interviewed by Marjorie MacLean. Scottsdale, Arizona. April 15, 1980.

Flood Control District of Maricopa County, Board of Directors Meeting. Record Book #1, Office of the Clerk of the Board of Supervisors. Phoenix, Arizona. August 3, 1959.

Flood Control District of Maricopa County, Board of Directors Meeting. Record Book #1, Office of the Clerk of the Board of Supervisors. Phoenix, Arizona. February 5, 1962.

Flood Control District of Maricopa County, Board of Directors Meeting. Record Book #1, Office of the Clerk of the Board of Supervisors. Phoenix, Arizona. November 20, 1963.

Flood Control District of Maricopa County, Board of Directors Meeting. Record Book #1, Office of the Clerk of the Board of Supervisors. Phoenix, Arizona. June 1, 1971.

*Flood Control Feasibility Report*. Indian Bend Wash, Maricopa County, Arizona. Water Resources Associates. December, 1967.

"Flood Control and Parks." *Scottsdale Daily Progress*. February 18, 1966.

Flood Plain Information Study, Maricopa County, Vol. 1, Indian Bend Wash Report, June 1964.

Foley, Col. John V. "Indian Bend Wash." *The Military Engineer*. No. 433, May-June, 1976. pp. 262-265.

Fretz, George. Interviewed by Marjorie MacLean. Scottsdale, Arizona. April 14, 1980.

Gentry, Billie Axline. Interviewed by Marjorie MacLean. Scottsdale, Arizona. March 28, 1980.

Gentry, Billie Axline, Scottsdale City Council member, and David Matthews, Public Information Officer. Multi-Media production, "Indian Bend Wash . . . Scottsdale, Arizona." 1980.

Gould, Lee. "Bond Issue Inundated." *Scottsdale Daily Progress*. March 9, 1966.

U.S. Congress. *House Document No. 303*. Letter from the Secretary of the Army. Hearing, 88th Cong., 2nd Sess., May 6, 1964.

Harris, David. Interviewed by Marjorie MacLean. Scottsdale, Arizona. May 13, 1980.

Iannella, George. Interviewed by Marjorie MacLean. Phoenix, Arizona. April 9, 1980.

"Indian Bend Park." *Scottsdale Daily Progress*. December 14, 1964.

"Indian Bend Wash Flood Project Cited for Award." *Arizona Professional Engineer*, May, 1975, pp. 8, 9, 17.

Jenkins, Mayor William. Interviewed by Marjorie MacLean. Scottsdale, Arizona. April 1, 1980.

Kabashigawa, Reggie. Interviewed by Marjorie MacLean. Los Angeles, California. April 17, 1980.

King, Ed. Interviewed by Marjorie MacLean. Los Angeles, California. April 17, 1980.

Lowry, John C., Acting Chief Engineer and General Manager, Maricopa County Flood Control District. Letter to H.W. Thompson, District Engineer, U.S. Army Corps of Engineers. October 5, 1961.

Lynch, Richard E. *Winfield Scott*, a biography of Scottsdale's founder. The City of Scottsdale, Arizona. 1978.

Mejia, Al. Interviewed by Marjorie MacLean. Scottsdale, Arizona. May 21, 1980.

Nicholas, Karan, Maricopa County Flood Control District. Letter to Len Erie, City of Scottsdale. September 11, 1979.

Matthews, William. Interviewed by Marjorie MacLean. April 15, 1980.

*Municipal Capital Improvements 1966-1968*. Prepared by Scottsdale Town Enrichment Program (STEP). March 15, 1965.

"Plan Consultant Retained by City." *The Arizonian*. February 20, 1964.

Public Meeting. Flood Control Along Indian Bend Wash.  
 Maricopa County Flood Control District. September 12, 1973.  
 Rhodes, office of Congressman John J. Telecon to William  
 Jenkins. September 23, 1975. 2:29 p.m.  
 Rhodes, Congressman John J. News Release, June 1, 1979.  
 Ruiz, Charles, P.E., "Indian Bend Wash Greenbelt, A City of  
 Scottsdale, Arizona Achievement." *Proceedings of Seminar on  
 Nonstructural Flood Plain Management Measures*, sponsored  
 by the Hydrologic Engineering Center Institute for Water  
 Resources, U.S. Army Corps of Engineers, May 4-6, 1976.  
 Ruziska, Ron. Interviewed by Marjorie MacLean. Scottsdale,  
 Arizona. March 28, 1980.  
 Rozelle, Martha Almon. *Neighborhood Redevelopment: The  
 Scottsdale Story*. The City of Scottsdale. March, 1978.  
 Royston, Hanamoto, Beck & Abey, Landscape Architects.  
*Chaparral Park Master Plan*. November, 1972.  
 Scaewater, L.B. Personal interview. Phoenix, Arizona. April  
 3, 1980.  
 Scottsdale Town Enrichment Program Parks and Recreation Task  
 Group Meeting Minutes. December 2, 1964.  
 "Scottsdale's Dry Wash Will Be An Environmental Attribute."  
*ENR*, January 1, 1976, pp. 16-17.  
 "Scottsdale's Flood Control is a Big New Green Park."  
*Sunset Magazine*. Vol. 160, No. 3. March, 1978, pp. 88-91.  
 Scottsdale Town Enrichment Program (STEP) Parks and  
 Recreational Task Group Minutes. December 2 and 9, 1964.  
 Stragier, Marc C. Interviewed by Marjorie MacLean. Scottsdale,  
 Arizona. March 24, 1980.  
 Stragier, Marc C. *Scottsdale's Greenbelt Flood Control Project*.  
 Undated.  
 Thompson, H.W., U.S. Army Corps of Engineers. Letter to John  
 C. Lowry, Acting Chief Engineer and General Manager,  
 Maricopa County Flood Control District. October 17, 1961.  
 Tims, Dr. Bud L. Interviewed by Marjorie MacLean. Scottsdale,  
 Arizona. April 3, 1980.  
 Tims, Mayor Bud L. Memorandum to Scottsdale City Council.  
 January 29, 1971.  
 Ueda, Jim. Interviewed by Marjorie MacLean. Scottsdale,  
 Arizona. April 18, 1980.

- U.S. Army Corps of Engineers. Los Angeles District. Design Memorandum #1. *Final Environmental Statement*. October, 1973.
- U.S. Army Corps of Engineers. *General Design Memorandum Phase I*. Los Angeles. October 23, 1973.
- U.S. Army Corps of Engineers. *Interim Report on Survey for Flood Control, Indian Bend Wash, Arizona*. Los Angeles. December 19, 1961.
- U.S. Army Corps of Engineers, Los Angeles District. Indian Bend Wash, Arizona. April 15, 1962.
- U.S. Army Corps of Engineers. Design Memorandum #1. General Design Memorandum — Phase I *Supplementary Report on Side Channels System*. Los Angeles. September, 1974.
- U.S. Army Corps of Engineers. Design Memorandum #1. General Design Memorandum Phase II. *Project Design for Indian Bend Wash, Arizona*. January, 1975.
- U.S. Army Corps of Engineers. Design Memorandum #1. General Design Memorandum Phase II. *Project Design for Indian Bend Wash, Supplemental Report #1*. April, 1976.
- U.S. Army Corps of Engineers. Design Memorandum #2. *Recreation Master Plan*. May, 1975.
- U.S. Army Corps of Engineers. Design Memorandum #2. *Recreation Master Plan, Supplemental Report No. 2*. January, 1977.
- U.S. Army Corps of Engineers. Design Memorandum #3. *Feature Design for Inlet Channel*. January, 1978.
- U.S. Army Corps of Engineers. *Report on Flood of 22 June 1972*. Phoenix Metropolitan Area, Arizona. October, 1972.
- U.S. Army Corps of Engineers. *Indian Bend Wash*. 1978.
- U.S. Army Corps of Engineers. Los Angeles District. Press Release, December 19, 1961.
- U.S. Army Corps of Engineers, District Engineer. Letter to Division Engineer, San Francisco, August 4, 1964.
- Walton, William. Interviewed by Marjorie MacLean. Chandler, Arizona. April 8, 1980.
- "Wash Plan Financing Assured." *Scottsdale Daily Progress*. November 26, 1974.
- "Wash Plan Snarled." *Scottsdale Daily Progress*. August 20, 1964.
- "Wash Plan Would Up Valuation." *Scottsdale Daily Progress*. November 11, 1967.

Wood, Bob. Interviewed by Marjorie MacLean. Los Angeles, California. April 17, 1980.

Worth, Kathy. "Millionaire Apartments Granted City Approval," *Scottsdale Daily Progress*. February 21, 1961.

Walton, William. Interviewed by Marjorie MacLean. Chandler, Arizona. April 8, 1980.

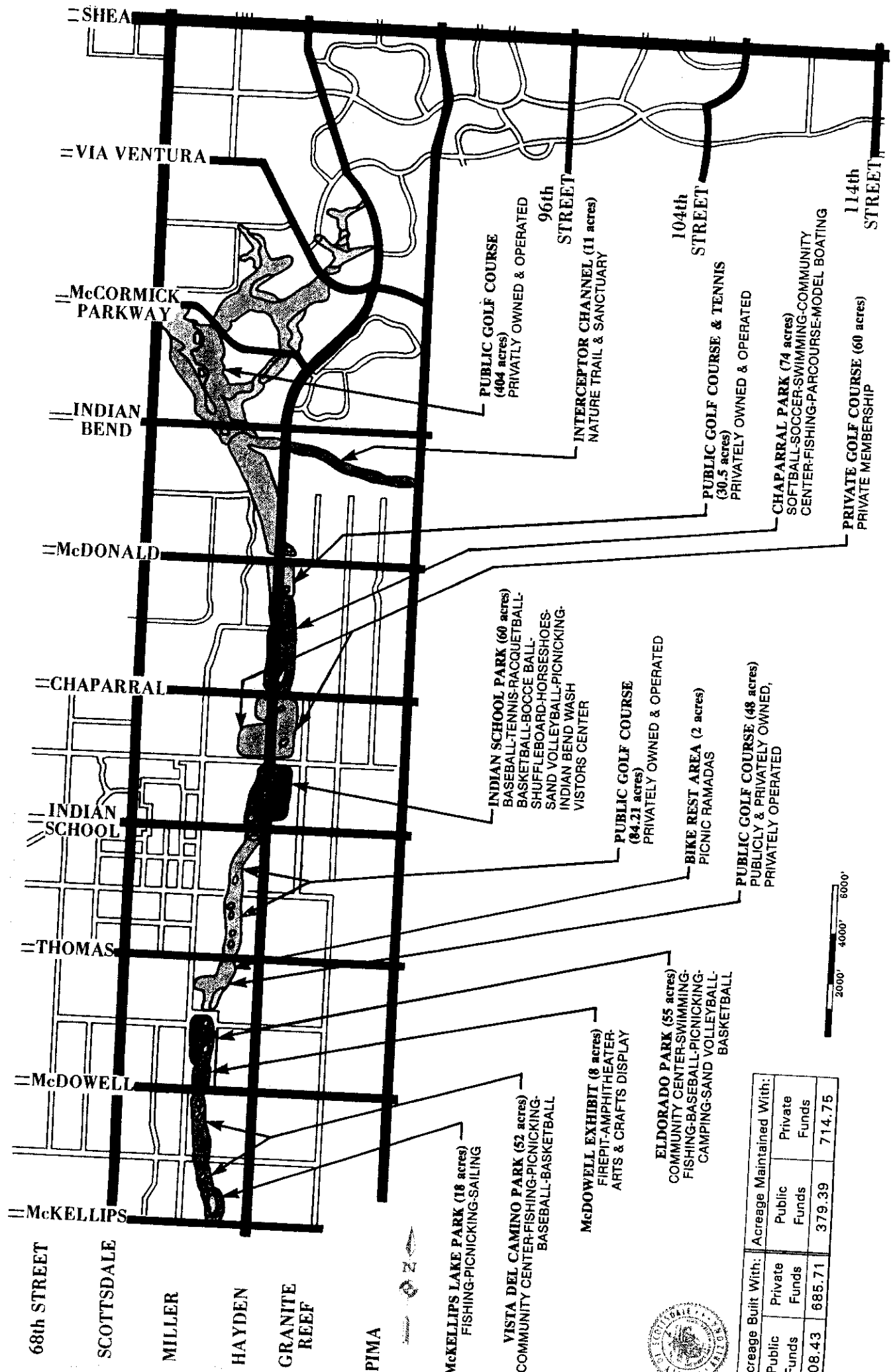
Warner, Tom. Letter to editor, *Scottsdale Daily Progress*. November 13, 1963.



**INDIAN BEND WASH GREENBELT  
FLOOD-CONTROL PROJECT  
SCOTTSDALE, ARIZONA**

**(Foldout Map)**





Acreage Built With:		Acreage Maintained With:	
Public Funds	Private Funds	Public Funds	Private Funds
08.43	685.71	379.39	714.75